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III.

CONTRIBUTION FROM THE HERBARIUM OF HARVARD
UNIVERSITY.

A PRELIMINARY SYNOPSIS OF NORTH AMERICAN
CARICES,

INCLUDING THOSE OF MEXICO, CENTRAL AMERICA, AND
GREENLAND, WITH THE AMERICAN BIBLIOGRAPHY
OF THE GENUS.

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Presented April 14, 1886.

IN the following Synopsis I have divided the genus, or rather its American representatives, into two sub-genera and fourteen sections. The primary divisions of the sections, designated by capitals, may be called groups. The names of the groups are the plurals of specific names. Sectional names of various ranks are now so numerous, that I have made the endeavor to choose in accordance with recognized rules of priority. If I have seen and examined critical or historic specimens, the collector's name has been printed in *Italics*. In no case have I admitted uncertain authorities for geographical distributions. *Herb.* is an abbreviation for Herbarium. Distinguishing characters have been given for those species which are not described in Gray's Manual, Chapman's Flora, or Coulter's Manual of Rocky Mountain Botany.

A genus so vast as *Carex* must always suffer divisions which are founded upon appearances rather than characters. The most remarkable of such disruptions with which I am acquainted is that proposed by Rafinesque, in 1840, in "The Good Book and Amenities of Nature." With a religious dread of large genera, this author divided *Carex* into eighteen genera, and raised them, together with four genera made from *Uncinia*, into ordinal rank under the name *Carexides*. Long before this time he had divided the genus into four genera: *Carex*, *Scuria*, *Triplina*, and *Triodus*. In 1844, J. Heuffel, in Flora, adopted nine genera, of which eight were erected upon those species,

comparatively few in number, which lie without the division commonly recognized as *Carex* proper. The genus *Carex* as received by Linnæus included *Uncinia*, which was separated by Persoon in 1807. In 1819, Beauvois, in Lestiboudois's "Essai sur la Famille de Cypéracées," proposed the genus *Vignea*, to include most of the distigmatous homostachyous species, choosing the name in honor of Prof. G. F. de la Vigne, translator of Schkuhr's "Riedgräser" into French.

The sectional divisions of the genus have been built heretofore largely upon artificial groups. So far as I know, the monostachyous species have always been thrown together, until an attempt was made to distribute them in natural groups in Coulter's Manual of Rocky Mountain Botany. I have neglected such names as *Unispicatæ*, *Monostachyæ*, *Homostachyæ*, and *Heterostachyæ*, as unsuitable for the designation of natural sections, however valuable they may be for artificial keys. For the same reason, I have not made use of the *Dontostomæ* and *Cyrtostomæ* of Fries, nor the *Chlorostachyæ* and *Melanostachyæ* of Tuckerman. In 1835 Elias Fries made a number of names, mostly plurals of the names of well-known and representative species, to designate some of the lesser groups of the genus. These were published in "Corpus Florarum Provincialium Sueciæ." This idea was followed to a small extent by Kunth, in 1837, in the second volume of "Enumeratio Plantarum." In 1843, Prof. Edward Tuckerman published his curious and critical "Enumeratio Methodica Caricum quarundam," a pamphlet of twenty-one pages, which was the first professed attempt to make a natural arrangement of Carices with named divisions. A year later Drejer's excellent "Symbolæ Caricologicæ" appeared, in which the general affinities of many species were discussed at length, and eleven sections proposed for the true Carices. The next important additions to the names of minor groups were made by John Carey, in the first edition of Gray's Manual, 1848.

SUBGENUS I. EUCAREX, Cosson, Fl. Paris, 744. Staminate flowers forming one or more terminal linear or club-shaped spikes (which, however, are often pistillate at base or apex). Pistillate flowers usually in distinct and simple mostly peduncled spikes. Cross-section of the perigynium circular, obtusely angled, or prominently trigonous in outline. Style mostly 3-parted and the achenium trigonous or triquetrous.

Section I. PHYSOCARPÆ, Drejer, Symb. Car. 10 (*Deflexocarpæ*, Bailey, Coulter Man. 373, in part). Perigynium mostly

straw-colored at maturity, papery in texture, more or less inflated, smooth, nerved, tapering into a beak as long or longer than the body: spikes few to many, distinct, compactly flowered: stigmas mostly three.—The representative species of the section are the larger members of the Vesicariæ and Lupulinæ. The extreme is represented on the one hand by the monostachyous *C. microglochin* and *C. pauciflora*, and on the other by the comose and green-spiked *C. Pseudo-Cyperus*. But even with these widely dissimilar extremes the section is a natural one. There are complete and almost insensible gradations from the one limit to the other. Most of the Lupulinæ and the extreme species of the Pseudo-Cyperæ do not have straw-colored perigynia until full or over maturity, while the perigynia of the Paucifloræ and Pseudo-Cyperæ are scarcely inflated or papery in texture. Occasionally the nerves are indistinct, rarely wanting. *C. Grayii* alone has hispid perigynia, and that rarely. The species of this section, almost entirely North American and European, are mostly large and stout, and probably to be regarded as the most developed of the genus.

A. *Paucifloræ*, Tuckerman, Enum. Meth. 7. (*Leucoglochin*, Fries, Summa, 73. *Orthoceras*, Koch, Fl. Germ. 748, is a sectional name made for *C. microglochin*.) Perigynium greenish, linear-lanceolate or almost needle-shaped, not inflated, strongly deflexed at maturity, several times longer than the inconspicuous scale: spike androgynous, the pistillate flowers at the base, few.—Small species, rare or local.

1. CAREX MICROGLOCHIN, Wahl. Königl. Acad. Handl. xxiv. 140.

Uncinia microglochin, Spreng. Syst. Veg. iii. 830; C. B. Clarke, Journ. Linn. Soc. xx. 401.

Uncinia Europæa, J. Gay, Flora, 1827, 28.

Remarkable for the elongated rhacheola which projects from the perigynium, completely filling the orifice. This plant stands midway between Carex and the singular genus Uncinia.—Colorado, *Hall & Harbour* 607; Greenland, *Andersson*. N. Europe, Alps, Himalayas.

2. CAREX PAUCIFLORA, Lightfoot, Fl. Scot. 543, t. 6.

Cold swamps: Vermont, Central and Western New York and Central Michigan, northward and northwestward to N. Minnesota, *Sandberg*, Rocky Mts. of British America, *Drummond*, and Sitka, *Bongard*, *Mertens*.

B. *Lupulinæ*, Tuckerman, Enum. Meth. 13. Perigynium green or greenish-tawny or sometimes yellow, more or less inflated (except in *C. subulata*), long, usually very turgid at the base, mostly erect or nearly so, very gradually lengthened into a long slenderly toothed beak, exceeding the scale:

spikes three or more, the staminate mostly one and commonly stalked, the pistillate often sessile, usually short and thick, often becoming dark colored in drying. — Mostly large and coarse species in meadows and bogs.

- * *Plant green, in appearance much like those of the last group, very slender; perigynium needle-shaped with reflexed teeth, not inflated.*

3. *CAREX SUBULATA*, Michx. Fl. Bor.-Am. ii. 173.

C. Collinsii, Nutt. Gen. N. Am. Pl. ii. 205.

C. Michauxii, Dewey, Sill. Journ. x. 273.

Deep cedar swamps in sphagnum: Canada, Michaux; Rhode Island, Olney, to New Jersey, Dewey, Nuttall, Carey, Parker; Schuylkill Co., Penn., Porter; Fayetteville, N. Carolina, Curtis; Aiken, S. Carolina, Canby, and Georgia, Neisler. Rare.

- * * *Whole plant yellowish; staminate spike sessile or nearly so; pistillate spikes loosely few-flowered; perigynium long-lanceolate, more or less spreading at maturity, somewhat turgid.*

4. *CAREX MICHAUXIANA*, Boeckeler, Linnæa, xli. 336.

C. rostrata, Michx. Fl. Bor.-Am. ii. 173, not With.

C. xanthophysa, vars. *nana* and *minor*, Dewey, Sill. Journ. xiv. 353, ff. 57, 58.

In cold bogs: Newfoundland, *La Pylaie*, to mountains of New England and Eastern New York; Northern Michigan, Porter. Local.

5. *CAREX FOLLICULATA*, Linn., Sp. Plant. 978.

C. xanthophysa, Wahl. Königl. Acad. Handl. xxiv. 152.

Scales, at least the lower ones, rough-awned and nearly as long as the perigynium. Leaves broad and flat. — Cold swamps: Newfoundland, *La Pylaie*, to New England, New York, Pennsylvania, New Jersey, Parker, and Michigan, Wheeler and Smith's Cat.

Var. AUSTRALIS.

C. folliculata, Ell. Sk. Bot. ii. 545? Chapm. Fl. 544.

C. folliculata, β , Boott, Ill. 91.

Plant much smaller and more slender, with narrower bracts and leaves; pistillate spikes longer and looser; perigynium much more slender, scarcely inflated, more spreading; scales, at least all above the lowest, much shorter than the perigynium, muticous or slightly awned. — Florida and northward, Chapman; New Orleans, *Herb.*; St. Augustine, Florida, Canby; "damp pine land," Santee Canal, South Carolina, Ravenel.

- * * * *Plant green; staminate spike commonly stalked; pistillate spikes thick and compactly flowered; perigynium very turgid at base.*

6. *CAREX INTUMESCENS*, Rudge, Linn. Trans. vii. 97, f. 3.

C. folliculata, Wahl. Königl. Acad. Handl. xxiv. 152, fide Boott.

Varies considerably in the size of the spikes. — Common in moist, shady pastures and in swamps: Norway House, S. W. of Hudson's Bay, about lat. 54°, *Herb.*; Newfoundland, *La Pylaie*; throughout the States east of the Mississippi. Evidently more common northward.

7. CAREX GRAYII, Carey, Sill. Journ. iv. 22.

C. intumescens, var. *globularis*, Gray, Ann. N. Y. Lyc. iii. 236.

Perigynia sometimes hispid (see Coult. Bot. Gaz. x. 295). — Central New York to Central Michigan (common) and Illinois; New Jersey, *Brinton*, Closter, Austin; Rome, Georgia, *Chapman*. Rare eastward.

8. CAREX LURIDA, Wahl. Königl. Acad. Handl. xxiv. 153; Fl. Lapp. 250.

C. lupulina, Muhl.; Willd. Sp. Pl. iv. 266.

C. Canadensis, Dewey, Sill. Journ. 2d ser. xli. 229.

Very variable in the shape and size of the spikes. — Hudson's Bay, Boott; common in wet places in the Northern States east of the Mississippi, rarer southward; "deep river swamps, Florida and northward," *Chapman*; Santee Canal, South Carolina, *Ravenel*; Apalachicola, Florida, *Chapman*; Decatur, Alabama, *J. D. Smith*; Limestone Gap, Indian Terr., *Butler*; Houston, Texas, *Lindheimer*.

Var. DIVERGENS.

C. Bella-villa, Dewey, Sill. Journ. 2d ser. xli. 229.

Plant more slender; spikes scattered or remote, oblong or cylindrical, much more loosely flowered, more or less staminate at the apex; perigynium more straw-colored, less turgid, slenderly beaked, diverging at right angles; scales longer, conspicuously awned. Much like *C. folliculata*, from which it may be distinguished by habit, narrow leaves, longer (1 inch or more) spikes, the upper of which are sessile. Possibly a hybrid with *C. folliculata*. — Belleville, Canada West, *Macoun*.

Var. POLYSTACHYA.

C. lupulina, var. *polystachya*, Schwein. & Torr. Monogr. 337.

C. gigantea, Kunth, Enum. Pl. ii. 503.

C. lupuliformis, Sartwell, Exsicc. 147.

C. Beyrichiana, Boeckeler, Linnæa, xli. 239.

Penn Yan and Jefferson Co., New York, *Sartwell*, *Crawe*, to Connecticut, *Wright*, and New Jersey, *Carey*, etc., and Delaware, *Canby*; Georgia, according to Boeckeler, l. c.; Red River, Louisiana, *Hale*; "Fort Smith to Rio Grande," *Bigelow*. Runs into the species in Michigan and other central States.

9. *CAREX GIGANTEA*, Rudge, Linn. Trans. vii. 99, f. 2.

Distinguished from *C. lurida*, var. *polystachya*, which it closely resembles, by its more slender and spreading pistillate spikes, its less turgid, more abruptly beaked and spreading perigynia, and shorter and smooth scales. Staminate spikes one to five. — Swamps: Kentucky, *Short*; Delaware, *Canby*, *Commons*, to Florida, *Chapman*, and Texas, *Hall*, 758. "Pine barren ponds, Florida to South Carolina and westward," Chapman. Evidently local.

10. *CAREX HALEI*, Carey, Chapm. Fl. 543.

C. turgescens, Dewey, Sill. Journ. 2d ser. iii. 356.

C. Halei, var. *minor*, Boott, Ill. 94.

Banks of the Apalachicola River, Florida, *Chapman*, to Louisiana, *Hale*, *Joor*; Arkansas, Carey, according to Boott, and E. Texas, *Wright*.

11. *CAREX ELLIOTII*, Schwein. & Torrey, Monogr. 357.

C. castanea, Ell. Sk. Bot. ii. 546.

C. Baldwinia, Dewey, Sill. Journ. xxvi. 107.

"Boggy margins of pine-barren streams, Florida to North Carolina," Chapman. I have seen specimens from Florida collected by *Chapman*, and from North Carolina collected by *M. A. Curtis*. A rare and pretty species.

C. Vesicariae, Tuckerman, Enum. Meth. 13. (*Tentaculatæ*, Tuckerman, l. c.)

Perigynium smooth and shiny, much inflated, at maturity straw-colored or occasionally purple, beaked and conspicuously short-toothed, usually prominently few-nerved, much shorter than in the *Lupulinae*: staminate spikes commonly two or more: pistillate spikes as a rule long and densely cylindrical. — The types of the group are *C. vesicaria*, *C. monile*, and *C. Tuckermani*.

* *Plants tall but slender; spikes few-flowered, globular or short-oblong, few, scattered or remote, straw-colored; leaves long and narrow.*

12. *CAREX TURGESCENS*, Torrey, Monogr. 419.

"Pine-barren swamps, Florida to North Carolina," Chapman. I have examined specimens from Florida collected by *Chapman*, from Society Hill, South Carolina, collected by *M. A. Curtis*, and from New Orleans in Herb. Torrey. Rare.

13. *CAREX OLIGOSPERMA*, Michx. Fl. Bor.-Am. ii. 174.

C. Oakesiana, Dewey, Sill. Journ. xiv. 351.

Borders of swamps and lakes: Bear Lake, Arctic America, English River, and Norway House (lat. about 54°), *Richardson*, southward to N. Minnesota, Central Lower Michigan, Central New York, and Pennsylvania; Labrador, *Allen*.

14. CAREX RAEANA, Boott, Rich. Arc. Exped. ii. 344.

Differs from *C. oligosperma* chiefly as follows: Pistillate spikes cylindrical, long ($\frac{1}{2}$ in. to $1\frac{1}{2}$ in.), the lower loosely flowered at the base and peduncled; perigynium long-beaked, conspicuously toothed, the teeth scabrous; pistillate scales narrow and acuminate. — Methye Portage, British America, long. about 110° , lat. about 57° , *Richardson*. Some of the perplexing and immature specimens from N. Maine, collected by *C. E. Smith* (Gray, Manual, 602), and from New Brunswick, collected by *J. Fowler*, are evidently to be referred here. The specimens vary in the shape of the orifice of the perigynium. Abundant and mature specimens from these regions are needed for the full determination of this species, and likewise of *C. rotundata* and *C. saxatilis*, var. *miliaris*. *C. Raeana* evidently occurs in Montana also. The species was named for Capt. John Rae, of Richardson's Arctic expedition.

15. CAREX PHYSOCARPA, Presl, Reliq. Hænk. i. 205.

The only typical specimens which exist in this country, so far as I know, I have from Professor Macoun. The species is allied to *C. monile* on one side and *C. saxatilis* on the other. Its distinguishing marks are the long peduncles (1 to 4 in.) of the oblong spikes, the two or more elevated staminate spikes, and a very slightly toothed or obliquely cut nearly nerveless perigynium, which is about equalled by the somewhat obtuse scale. *C. saxatilis*, var. *Grahami*, is apparently its nearest ally, but that variety has shorter and thicker pistillate spikes which are short-peduncled, one or two short-stalked staminate spikes and a sharply cut, strongly nerved perigynium which is twice longer than the scale. The merits of *C. physocarpa* and *C. saxatilis*, var. *Grahami*, cannot be determined until more material accumulates. My present impression is that expressed by Dr. Boott (Linn. Trans. xix. 220), that the plants of our Rocky Mountains, which have been referred to the var. *Grahami*, belong rather to *C. physocarpa*. The plants vary widely from the type of *C. physocarpa*, but fully as widely from var. *Grahami*. It may be that the two species are not distinct. Var. *Grahami* is founded upon a plant of Scotland. — Nootka Sound, Vancouver's I., Haenke; Rocky Mountains of British America, *Drummond*, named by Dr. Boott; Bow River at Morley, Rocky Mountains of British America, *Macoun*.

* * Plants mostly low, with short and more or less purple spikes.
Perigynia erect or ascending.

16. CAREX SAXATILIS, Linn. Fl. Lapp. 259.

C. pulla, Gooden. Linn. Trans. iii. 78.

C. vesicaria, var. *alpigena*, Fries, Mant. ii. 142.

Greenland, *Vahl*, *Warming & Holm*, *Fries*. Kamtschatka, *Wright*. N. Europe.

Var. (?) *GRAHAMI*, Hooker & Arnott, Brit. Fl. 8th ed. 510.

C. Grahami, Boott, Linn. Trans. xix. 215.

C. vesicaria, var. *dichroa*, Anderss. Cyp. Scand. 18.

C. saxatilis, var. *major*, Olney, Bot. King's Rep. 370.

See *C. physocarpa*. — High mountains from Colorado and Utah northward.

Var. (?) *MILIARIS*, Bailey, Coult. Bot. Gaz. ix. 120.

C. miliaris, Michx. Fl. Bor.-Am. ii. 174.

C. pulla, var. (?) *miliaris*, Gray, Manual, 5th ed. 602.

Very slender, 6 to 16 inches high; leaves and bracts very narrow, almost filiform: spikes 1–3, small (two lines to six lines long, two lines to three lines broad), sessile or the lowest very short-stalked, brown-and-green, the upper usually ovoid or globular, and sometimes very much reduced in size: perigynium ovoid, small, nerveless or nearly so, little inflated, the beak minutely toothed, about the length of and broader than the acute purple-margined scale. — Moosehead Lake, Maine, *Smith*, and northward to Lower Canada and New Brunswick, *Fowler*. More material is needed. Singular specimens from Ungava Bay, N. Labrador, coll. by *Turner*, 1884, appear to belong here. This plant is said by Olney to occur in N. Minnesota.

+ + *Perigynia squarrose*.

17. *CAREX COMPACTA*, R. Brown, Ross's Voy. Appx. cxliii.

C. membranacea, Hook. App. Parry's 2d Voy. 406.

C. hymenocarpa, Drejer, Revis. Crit. Car. 58.

C. ampullacea, var. *borealis*, Lange, Rink's Groenl. ii. 118.

Six to sixteen inches high, stout: culm smooth or very nearly so, longer than the flat leaves: lowest spike subtended by an abruptly spreading leafy bract: pistillate spikes usually two, mostly closely sessile (the lowest sometimes very short-stalked), densely and evenly cylindrical, in typical specimens about an inch long, often shorter: staminate spikes one or two, short and obtuse or nearly so: perigynium broadly ovate, very short-beaked, the orifice nearly entire, a little longer than the white-pointed scale, bladder-like and shining, very fragile. Evidently too near the next. — Arctic America: "Cumberland House [about lat. 54° and southwest of Hudson's Bay] to Arctic coast," Boott; Baffin's Bay, R. Brown; Southampton I., Capt. Parry; North Somerset, Duckett Cove, Ross; Kotzebue's Sound, Arnott;

Greenland, Vahl, fide Drejer ; Nottingham I., Hudson's Straits, *Macoun* ; Bear Lake, *Drummond* ; Kamtschatka, *Wright*. Figured in Bot. Gaz. for August, 1885.

18. *CAREX ROTUNDATA*, Wahl. Fl. Lapp. 235.

Distinguished from the last by its firmer perigynium and involute-filiform leaves. Andersson regards it as an extreme form of *C. rostrata*, With. (*C. ampullacea*, Gooden.). — Arctic America : Slave Lake and Fort Enterprise, Boott ; Greenland, Vahl, *Warming & Holm*. Specimens from Ungava Bay, N. Labrador, *Turner*, 1884, are evidently this species. One of *C. E. Smith's* specimens from Moosehead Lake, Maine, may belong here also. N. Europe.

* * * *Plants mostly large and stout.*

+ *Perigynium not conspicuously turgid, squarrose at maturity and the spikes comose in appearance.*

19. *CAREX ROSTRATA*, Withering, Arrang. Brit. Pl. ed. ii. (1790).

C. obtusangula, Ehrh. Calam. Exs. no. 50 (1791).

C. ampullacea, Gooden. Linn. Trans. ii. 207 (1792).

Mackenzie's River, *Herb.* ; Saskatchewan, *Bourgeau, Macoun* ; Oregon, *Lyall*, and others ; Colorado, *Canby, Hall & Harbour* 615, and others ; N. Michigan, *Porter*. Probably generally distributed throughout British America, the Rocky Mountain region, and westward. Europe.

Var. *UTRICULATA*.

C. utriculata, Boott, Hook. Fl. Bor.-Am. ii. 221.

C. utriculata, var. *minor*, Boott, l. c. ; Sartwell, Exsic. no. 153.

C. ampullacea, var. *utriculata*, Carey, Gray's Man. 1848, 566.

C. utriculata, var. *globosa*, Olney, Bot. King's Rep. 374.

In bogs entirely across the continent north of Ohio.

C. Bongardiana, C. A. Meyer, ex Trautv. & Meyer, Fl. Ochot. 101 (*C. vesicaria*, Prescott in Bongard's Obs. Sitcha, 169), is evidently an attenuated and long-beaked form of *C. ampullacea*. Dr. Boott, however, regarded it as a form of *C. vesicaria*. — Sitka, *Mertens* ; Oregon, *Hall*.

+ + *Perigynia conspicuously turgid, ascending at maturity.*

20. *CAREX MONILE*, Tuckerman, Enum. Meth. 20.

C. Vaseyi, Dewey, Sill. Journ. xxix. 347.

Common in wet places in all the Northern States east of Nebraska ; Colorado, *Vasey* ; Ostrander's Meadow, California, *Bolander* 6211 ; "Cumberland House to Bear Lake," Boott.

Var. OBTUSISQUAMIS.

C. vesicaria, γ , W. Boott, Bot. Calif. ii. 252.

C. vesicaria, var. (?) *obtusisquamis*, Bailey, Carex Cat., and Bot. Gaz. ix. 121.

Spikes short (an inch long or less), sessile, purple; perigynium abruptly contracted into a short nearly entire beak, longer than the broad purple and white-margined very obtuse scale. — Soda Springs, head of Tuolumne River, California, *Brewer*, 1781.

21. CAREX VESICARIA, Linn. Sp. Pl. 979.

Huntington Valley, Nevada, *Watson* 1270, a young specimen; California, Summit Camp, *Dr. Kellogg*, Yosemite Valley, *Brewer* 1654, Tomales Bay, *Bolander* 2303, Sprague River, east of Klamath Valley, *Hildebrand*; Northern British Columbia, *Rothrock*. Evidently rare. Europe.

Var. MAJOR, Boott, Hook. Fl. Bor.-Am. ii. 221.

Vars. *lanceolata* and *globosa*, Olney, Proc. Am. Acad. viii. 407, 408.

Mostly larger: perigynium long-lanceolate, greenish or rusty, little inflated, thick in texture, many-nerved, much longer than the small scale. — Oregon, *Hall* 608, 609, *Henderson*, Multnomah Co., *Howell*; Columbia River, Douglas, Scouler.

22. CAREX TUCKERMANI, Boott, Hook. Journ. Bot. v. 73.

C. bullata, Dewey, Sill. Journ. ix. 71.

C. Tuckermani, var. *cylindrica*, Dewey, Sill. Journ. xlix. 48.

C. cylindrica, Carey, Gray's Man. 1848, 566.

Perigynia more inflated than in any other American species. — W. New England and N. Vermont to Ohio, Illinois, and Wisconsin; N. Jersey, Britton Cat.

23. CAREX BULLATA, Schkuhr, Riedgr. Nachtr. 85, f. 166.

C. cylindrica, Schw. An. Tab.

C. Greenii, Boeckeler, Flora, 1858, 649.

Culm very sharply angled, at least above, and slender. The perigynia have a peculiar greenish-brown appearance. The roughness of the beaks is not always apparent. — Wet places, Mass. to N. Jersey and Pennsylvania, *Porter*; Society Hill, S. Carolina, *Curtiss*.

C. BULLATA \times *UTRICULATA* (*C. Olneyi*, Boott, Ill. 15, t. 42). — Providence, R. Island, *Olney*. Sterile or nearly so.

24. CAREX RETRORSA, Schweinitz, An. Tab.

C. reversa, Sprengel, Syst. Veg. iii. 827.

Marshy places : River du Loup, Quebec, *Pickering* ; New England to Pennsylvania, Michigan, and Wisconsin ; Sault St. Marie, N. Michigan, *Porter* ; Saskatchewan, *Bourgeau* ; Northwest Coast, *Douglas* ; Oregon, *Hall*.

Var. *HARTII*, Gray, Man. 5th ed. 600.

C. Hartii, and var. *Bradleyi*, Dewey, Sill. Journ. 2d ser. xli. 226.

C. Macouni, Dewey, Sill. Journ. 2d ser. xli. 228.

Pistillate spikes loosely flowered, long, all scattered or remote, the lower ones on very long peduncles : perigynium spreading or somewhat reflexed. — Pompet, Vermont, *Morgan* ; New York, Dundee, Yates Co., *Samuel Hart Wright*, Ludlowville, Tompkins Co., *Lord*, Greece, near Rochester, *Bradley* ; Flint, Michigan, *D. Clarke* ; Hastings Rood and Belleville, Canada West, *Macoun*.

25. *CAREX TENTACULATA*, Muhl. ; Willd. Sp. Pl. iv. 266.

C. rostrata, Willd. Sp. Pl. iv. 282.

C. tentaculata, var. *rostrata*, Pursh, Fl. 14.

C. Purshii, Olney, Exsicc. fasc. i. no. 30.

Variable. — Common in wet grounds throughout the States east of the Mississippi ; Texas, *Wright*. South America.

Var. *GRACILIS*, Boott, Ill. 94.

Smaller and slender, with about two small erect pistillate spikes which are densely cylindrical (an inch to an inch and a half long), the size of a slender lead pencil. — Mountains of Vermont and New Hampshire ; Tennessee, *Lesquereux*. One of the handsomest of our *Carices*.

C. TENTACULATA × *LURIDA* (var. ? *altior* of *C. tentaculata*, Boott, l. c.). — Penn Yan, N. York, *Sartwell* ; Amherst, Mass., *Tuckerman* ; North Hero, Vermont, *Morong*.

D. *Pseudocyperæ*, Tuckerman, Enum. Meth. 13. Perigynium less inflated, more conspicuously nerved or even costate, provided with more or less setaceous or aristate teeth ; scale usually aristate ; spikes mostly nodding, comose in appearance, in color greenish, greenish-yellow, or whitish-yellow.

26. *CAREX SCHWEINITZII*, Dewey, Sill. Journ. ix. 68.

A fine local species. — "Canada to New Jersey," Boott ; "New England, New Jersey, W. New York, and northward," Gray's Manual ; Pittsfield, Mass., and Pownal, Vermont, Dewey ; New York, *Cowles*, Fairfield, *Gray*.

27. *CAREX HYSTRICINA*, Muhl. ; Willd. Sp. Pl. iv. 282.

C. Cooleyi, Dewey, Sill. Journ. xlviii. 144.

C. Georgiana, Dewey, Sill. Journ. 2d ser. vi. 245.

C. Thurberi, Dewey, Bot. Mex. Bound. 232.

Wet meadows and marshes throughout the States east of the Mississippi from Canada to Georgia, but evidently inclining to be local; New Mexico, *Wright*; Santa Rita Mts., Arizona, *Pringle*. — The name was originally written *hystericina*, a name of no application. That the author meant to refer to the comose or hystericinuous character of the spikes is evident from Willdenow's German name of the plant, no doubt suggested by Muhlenberg, "Stachelschweinartige Segge," porcupine-like sedge.

28. *CAREX ACUTATA*, Boott, Linn. Trans. xx. 124.

C. feminea, Steud. Cyper. Pl. 203.

Much like the last, from which it differs in its greater size (two to four feet high): pistillate spikes long and thick (one and a half to three inches long), erect, the lowest one or two short-stalked: perigynium elliptic-ovate, thick in texture, dull, very prominently many-ribbed, abruptly contracted into a rather short, white nerveless beak, longer than the rough and aristate scale. — S. Arizona, near Fort Huachuca, *Lemmon* 2903 (1882). Founded upon South American specimens.

29. *CAREX PSEUDO-CYPERUS*, Linn. Sp. Pl. 978.

Swamps and lakes: New England to Pennsylvania and Michigan; Portage de Ratz at Fort de la Rivière, Winnipeg, *Bourgeau*. Evidently not common. Europe, Asia, Africa, South America.

Var. *COMOSA*, W. Boott, Bot. Calif. ii. 252.

C. furcata, Ell. Sk. Bot. ii. 552.

C. Pseudo-Cyperus, Schw. & Torr. Monogr. 355.

C. comosa, Boott, Linn. Trans. xx. 117.

Common east of the Mississippi, in low grounds, from Canada to Georgia; Multnomah Co., Oregon, *Howell*; near San Francisco, Cal., *Bolander* 2301.

E. *Squarrosæ*, Carey, Gray's Man. 1848, 564. Perigynium obconic or obovoid, squarrose in exceedingly dense spikes.

* *Spikes mostly three to six inches long.*

30. *CAREX SPISSA*.

Culm four to six feet high, very stout, from a woody root, smooth or nearly so: leaves very numerous, a half-inch wide, stiff, glaucous, conspicuously serrate on the margins, about as long as the culm: lower bract very long and leafy, the uppermost short or nearly obsolete: spikes 6–12 or more, the lowest four to six inches long and long-

peduncled (peduncle one to fifteen inches long), the upper becoming sessile, often two or three from an axil, the intermediate ones often staminate at the top, the pistillate portions densely and evenly cylindrical, all erect, the staminate four to six or more in number and one to four inches long; perigynium small (a line and a half long), yellowish green, elliptic or obovate, firm in texture, few-nerved, often slightly compressed, squarrose, about the length of or shorter than the stout and toothed awn of the scale: stigmas three. — California, San Diego Co., *Pringle*, San Juan Capistrano, *J. C. Nevin*; Arizona, *Pringle*; Lower California, Guadeloupe Cañon, *Orcutt*. The stoutest *Carex* I know.

* * *Spikes not exceeding an inch and a half in length.*

31. CAREX STENOLEPIS, Torrey, Monogr. 420.

C. Frankii, Kunth, Enum. Pl. ii. 498.

C. Shortii, Steud. Nomen. Bot. 296.

Swamps and meadows; Central Pennsylvania, *Porter*, to the upper districts of Georgia, westward to Kentucky, *Short*, and southwestward to Louisiana and Texas, *Wright*, *Reverchon*.

32. CAREX SQUARROSA, Linn. Sp. Pl. 973.

C. typhina, Michx. Fl. Bor.-Am. ii. 169.

C. typhinoides, Schwein. An. Tab.

Bogs, New England to Georgia, and west to Michigan and Illinois; N. W. Arkansas, *Harvey*; Red River, Louisiana, *Hale*.

Section II. TRACHYCHLÆNÆ, Drejer, Symb. Car. 9. Perigynium mostly thick and hard in texture, commonly scabrous or hirsute, straight-beaked; pistillate spikes compactly flowered, mostly large, erect or nearly so; staminate spikes one or more; stigmas three. — Large and coarse species, mostly paludose. A heterogeneous section, originating in the Anomalæ with very short and entire beaks and terminating in the much-developed beaks of the Paludosæ. The Anomalæ connect the section with the Granulares. *C. vestita*, *C. Oregonensis*, and *C. Houghtonii* are not paludose, and perhaps others of the section are not. *C. filiformis* and *C. acutiformis* may be said to represent the section.

A. *Shortianæ*. Terminal spike androgynous, staminate below; perigynium small and smooth, nearly beakless, entire. — Including one anomalous species, which Dr. Boott prefers to associate with *C. verrucosa*, Ell.

33. CAREX SHORTIANA, Dewey, Sill. Journ. xxx. 60.

C. Shortii, Torr. Monogr. 407.

C. formosa, Kunth, Enum. Pl. ii. 431.

S. Pennsylvania to Virginia and westward to Ohio, S. Illinois, Nebraska according to Dewey, and Limestone Gap, Indian Territory, *Butler*.

- B. *Anomalæ*, Carey, Gray's Man. 1848, 557. Terminal spike all staminate; pistillate spikes long and cylindrical, mostly densely flowered; perigynium broad and short, short-beaked, the orifice very slightly notched or entire, mostly granulate. — Tall species with rough leaves.

34. CAREX JOORI.

Culm two feet high, very sharply angled, rough: leaves narrow, slightly carinate, rough on the margins, much surpassing the culm: bracts sheathless, setaceous, very rough on the margins, the lower one or two surpassing their spikes, the others much shorter: spikes about six, cylindrical, densely flowered, one or two inches long, erect or slightly spreading, all on slender rough peduncles an inch or two long, the terminal distant and staminate: perigynium short-obovate, nearly circular in cross-section, abruptly contracted into a short entire and sharp beak half as long as the body, strongly many-nerved, granulate, somewhat inflated, dark-colored, squarrose, about as long as the serrate awn of the hyaline scale: achenium triquetrous, broadly obovate or oval; stigmas three. — Comite Swamp, near Baton Rouge, La., *J. F. Joor*, Aug. 5, 1885.

35. CAREX SCABRATA, Schweinitz, An. Tab.

Transition to the Granulares. — New England to South Carolina, *J. D. Smith*, and Tennessee, *Curtiss*, and westward to Michigan.

36. CAREX AMPLIFOLIA, Boott, Hook. Fl. Bor.-Am. ii. 228, t. 226.

Culm stout (two to three and a half feet high), very sharply angled, rough above: leaves many, very broad (5–8 lines), rough on the margins, usually exceeding the culm: bracts leaf-like, sheathless: pistillate spikes four to six, erect, the upper ones sessile, the lower very short-stalked, all erect, one to four inches long, slenderly cylindrical: perigynium elliptic, conspicuously few-nerved, abruptly narrowed into a whitish beak, spreading, about as long as the awn-pointed whitish narrowly purple-margined scale. — California, Plumas Co., *Mrs. Bidwell*, Mariposa Grove, *Bolander* 5011; Oregon, *Hall*, *Howell*, etc.; N. Idaho, *fide* Boott.

- C. *Hirtæ*, Tuckerman, Enum. Meth. 14. (*Lasiocarpe*, Fries, Summa, 70. *Lanuginosæ* and *Scariosæ*, Carey, Gray's Man. 1848, 560.) A heterogeneous group distinguished from the last by the longer and more deeply cut beak and by the hairy perigynium. — The perigynium of *C. striata* is often smooth. *C. filiformis* and *C. Houghtonii* may be taken as types of the group.

* *Beak entire or nearly so.*

37. *CAREX SARTWELLIANA*, Olney, Proc. Amer. Acad. vii. 396.

Whole plant softly pubescent: culm two to three feet high, rigid: leaves about two lines broad, about the length of the culm: bracts leafy, sheathless: staminate spike one, sometimes bearing a few pistillate flowers: pistillate spikes four or five, sessile, an inch or two long, densely flowered, ferrugineous: perigynium trigonous-obovoid, minutely beaked, the orifice entire, densely tomentose, a little longer than the mucronate purple-margined and ciliate scale. — Named in memory of Dr. Henry P. Sartwell of Penn Yan, New York, an ardent botanist, an early student of this genus, and author of an *Exsiccatae*. — Yosemite Valley, California, *Brewer* 1636, *Bolander* 6221.

38. *CAREX VESTITA*, Willd. Sp. Pl. iv. 263.

In sandy soils, New England and New York to Pennsylvania, *Porter*, and Georgia. "Sandy swamps in the upper districts," *Chapman*.

39. *CAREX HIRTISSIMA*, W. Boott, Bot. Calif. ii. 247.

Culm rather slender but strict, a foot and a half high, smooth: leaves shorter than the culm, pubescent, those on the culm producing conspicuous pubescent sheaths: spikes three or four, the upper short-stalked, erect, about an inch long, scattered rather loosely flowered, usually exceeded by the leafy bracts: perigynium triangular-elliptic, contracted at both ends, nerveless or nearly so, hirsute, ribbed on the angles, produced abruptly into a slender beak, about the length of the white and very abruptly aristate scale. The beak becomes more or less bifid by splitting at full or over maturity. — Summit Camp, Sierra Nevada, California, *Dr. Kellogg*.

* * *Beak distinctly bifid.*

40. *CAREX OREGONENSIS*, Olney, Proc. Amer. Acad. 1872, 407.

C. Halliana, Bailey, Bot. Gaz. ix. 117.

Culm a foot high, smooth or nearly so, very leafy: bracts leaf-like, with thin white auricles, the lower exceeding the culm: pistillate spikes about three, an inch long, often staminate at the top, erect, approximate, shortly peduncled: perigynium ovate, tapering at both ends, prominently many-nerved, thickly covered with short stiff hairs, gradually produced into a white and smooth toothed beak, longer than the ovate, acute, membranaceous, and often dull-margined scale: achenium large, triangular-obovoid or rarely lenticular-obovoid. — Name given by Mr. Olney in the list of Hall's Oregon plants without description, and the numbers of the collection became mixed. In the Olney

herbarium at Providence I found the plant with Mr. Olney's name attached. — Oregon, *Hall* 605, Howell, sandy hillsides on subalpine slopes of Mt. Hood, *L. F. Henderson*, 1884; Washington Terr., *Suksdorf*.

41. *CAREX STRIATA*, Michx. Fl. Bor.-Am. ii. 174.

C. polymorpha, Torr. Monogr. 413.

New Jersey to Florida in pine-barren swamps. "Quite common in pine-barren regions, and mostly confined to the yellow drift," Britton's N. Jersey Catalogue. The Southern specimens have more hairy and more tapering perigynia than the New Jersey form.

42. *CAREX HOUGHTONII*, Torrey, Monogr. 413.

Dr. Douglas Houghton, a brilliant naturalist, first State Geologist of Michigan. — New Brunswick, *Fowler*; Maine, at Orono, *Scribner*, Milford, and Cumberland, *Blake*; Gilmanton, N. H., *Blake*; New York, near Lake Placid, Essex Co., *Peck*; shore of Lake Ontario (in New York?), *Whitney*, 1849; Michigan, Clare Co., central part of lower peninsula, *Wheeler*, Keweenaw, *Robbins*, and Isle Royal, *Porter*; sixty miles north of Belleville, Ontario, *Macoun*: Minnesota, Lake Itasca, Houghton (the original station), Blue Earth Co., *Leiberg*; Council Bluffs, *Geyer*; British America on Athabasca Plains, *Macoun*, Saskatchewan, *Herb.*, Methye Portage, long. about 110°, lat. about 57°, *Richardson*. Rare.

43. *CAREX FILIFORMIS*, Linn. Sp. Pl. 976.

In bogs from New England to Pennsylvania and Michigan, and northwestward to the Saskatchewan and northward. Europe.

Var. *LATIFOLIA*, Boeckeler, *Linnæa*, xli. 309.

C. lanuginosa, Michx. Fl. Bor.-Am. ii. 175.

C. pellita, Muhl.; Willd. Sp. Pl. iv. 302.

C. æmatorhyncha, Olney, Bot. King's Rep. 373.

C. filiformis, var. *æmatorhyncha*, W. Boott, Bot. Calif. ii. 250.

In bogs across the continent from Ohio and Kentucky northward; also in New Mexico, *Wright*.

44. *Carex hirta*, Linn. Sp. Pl. 975.

Resembles *C. Houghtonii* and *C. trichocarpa*, but differs in its very remote and smaller pistillate spikes and its loosely hairy perigynium, sheaths, and leaves. — Introduced at Ashland, Mass., *Morong*, where it is thoroughly established, about Boston, W. Boott, in ballast at Philadelphia, *Scribner*, and at Ithaca, N. York, *Dudley*.

D. *Paludosæ*, Fries, Corp. 190. (*Lacustres* and *Aristatæ*, Carey, Gray's Man. 1848, 561.) Staminate spikes two or more, long-stalked: pistillate spikes

two to several, usually all peduncled, long and heavy, loosely flowered, erect or nodding: perigynium large, thick in texture, strongly nerved, mostly smooth, usually produced into a long beak which terminates in conspicuous awl-like erect or spreading teeth. — Coarse species.

45. *CAREX TRICHOCARPA*, Muhl.; Willd. Sp. Pl. iv. 302.

C. striata, Carey, Gray's Man. 1848, 561.

C. trichocarpa, var. *turbinata*, Dewey, Sill. Journ. xi. 159.

Marshes throughout the States east of the Mississippi, south to Georgia.

Var. *IMBERBIS*, Gray, Man. 5th ed. 597.

Perigynium smooth, teeth usually shorter, pistillate scales longer and sheaths scabrous. — New York, *Sartwell*, to Illinois. Bolander's no. 4689, referred here in Bot. Calif. ii. 251, is probably not this plant.

Var. *DEWEYI*, Bailey, Bot. Gaz. x. 293.

C. læviconica, Dewey, Sill. Journ. xxiv. 47.

Big Sioux and Yellowstone Rivers, *Hayden*, Bismarck, Dakota, *Seymour*, and northward.

Var. *ARISTATA*, Bailey, Bot. Gaz. x. 294.

C. aristata, R. Br. Narr. Frankl. Exp. App. 764.

C. atherodes, Sprengel, Syst. Veg. iii. 828.

C. orthostachys, C. A. Meyer, Fl. Alt. iv. 231.

C. mirata, Dewey, Wood's Bot. 1848, 593.

C. aristata, var. *longo-lanceata*, Dewey, Sill. Journ. xviii. 102.

Generally distributed from New England to Oregon, and far northward.

46. *CAREX WATSONI*, Olney, Bot. King's Rep. 370.

Culm erect, a foot and a half high: spikes about seven, deep red-brown, the four uppermost staminate, the topmost much the longest: scales of the staminate spikes lanceolate and acute or aristate, hispid, red-brown on the margins, three-nerved and pale in the centre: pistillate scales lanceolate and abruptly aristate, ciliate at the apex: perigynium deeply cleft, the teeth spreading and clothed with a few lax hairs. — Founded upon very young and unsatisfactory specimens. I imagine that it is *C. riparia*. — Washoe Mountains, on a creek bank at the mouth of King's Cañon near Carson City, Nevada, alt. 4,500 ft., *Watson* 1246.

47. *CAREX SERRATODENS*, W. Boott, Bot. Calif. ii. 245.

Culm one to two feet high, smooth, leaves a line or two broad, mostly shorter than the stem: bracts leafy, the lowest exceeding the culm, sheathless or nearly so, with purple auricles at the base: spikes

3 or 4, the terminal club-shaped and staminate, an inch or so long, the others pistillate, an inch or less long, sessile: perigynium lance-ovate, rather obscurely nerved, smooth, the spreading teeth conspicuously hispid, mostly longer than the ovate and awned brown scale. — Found by Wm. Boott in Herb. Olney, without date, collector, or locality, but ticketed "California."

48. *CAREX RIPARIA*, W. Curtis, Fl. Lond. iv. t. 60.

C. lacustris, Willd. Sp. Pl. iv. 306.

Throughout the States east of the Mississippi and in Louisiana; Pend d'Oreille River, N. Idaho, *Lyall*; Arctic America, *Herb. Europe*.

49. *Carex acutiformis*, Ehrhart, Calam. Exs. no. 30.

C. paludosa, Gooden. Linn. Trans. ii. 202.

Thoroughly established at Dorchester, Mass.; boggy meadow, New Bedford, Mass., *Willey*.

Section III. MICRORHYNCHÆ, Drejer, Symb. Car. 9. (Including *Ærostachyæ* and *Melananthæ*, Drejer, l. c.) Parallel with the last section: distinguished in general by the much smaller and nearly or entirely beakless and mostly entire-mouthed perigynium which is much thinner in texture: stigmas two or three. — Paludose and alpine species of various habit, mostly possessing colored spikes, often growing in dense tufts or tussocks. This is the most critical section of the genus. It is largely represented in Europe and North America.

A. *Atrata*, Kunth, Enum. Pl. ii. 431. Terminal spike club-shaped and androgynous with the staminate flowers below; pistillate spikes mostly short and dark-colored, either erect or drooping; plants mostly alpine or boreal. — The members differ widely in habit, the spikes of *C. Mertensii* and *C. atrata*, var. *ovata*, being mostly light-colored or parti-colored and drooping, while those of the others are black or nearly so, and more or less erect, although some black-spiked forms of *C. atrata* have drooping spikes.

50. *CAREX ALPINA*, Swartz, Lilj. Svensk. Fl. ed. ii. 26.

C. Vahlîi, Schkuhr, Riedgr. 87.

C. media, R. Br. App. Frankl. Narr. 763.

C. alpina, var. *nigrescens*, Olney, Prelim. Cat. Wheeler's Pl. 53.

From Isle Royale, Lake Superior, and the mountains of Colorado and Oregon, to Arctic America. Europe. Asia.

Var. **HOLOSTOMA**.

C. holostoma, Drej. Revis. Crit. Car. 29.

Differs from *C. alpina* chiefly in its beakless perigynium. — Greenland, *Fries*, *Warming & Holm*, etc.

51. *CAREX MERTENSII*, Prescott, Bong. Veg. Sitcha in Mem. Acad. St. Petersb. vi. ser. ii. 168.

Culm two feet high, rough on the very sharp angles, very leafy: leaves short, broad, and flat, loosely and conspicuously sheathing, rough: bracts leaf-like, sheathless or nearly so, the lower exceeding the culm: spikes five to eight, an inch or two long, very densely flowered, all more or less staminate at the base, the upper one conspicuously so, all drooping on filiform scabrous peduncles: perigynium very flat and very broadly ovate, winged, very thin in texture, green or whitish, few-nerved, appressed, much longer and broader than the purple white-ribbed scale: stigmas mostly 3. — Named for Karl Heinrich Mertens, 1796–1830, of St. Petersburg, who made a botanical voyage around the world. — Marais Pass, Montana, *Canby*; Oregon, *Cusick*, *Hall* 599, *Henderson*; Washington Terr., *Lyall*, and northward to Sitka, *Mertens*.

52. *CAREX ATRATA*, Linn. Sp. Pl. 976.

White Mts., N. H., and high mountains of Wyoming, Colorado, Utah, Arizona, and California, and northward. Europe. Asia.

Var. *NIGRA*, Boott, Ill. 114.

C. nigra, All. Fl. Ped. ii. 267.

Westward with the last. Europe.

Var. *OVATA*, Boott, Ill. 114.

C. ovata, Rudge, Linn. Trans. vii. 96, t. 9.

Mountains of Colorado and Utah southward; Newfoundland, Rudge, the original locality, but not since found there, so far as I know.

Var. *ERECTA*, W. Boott, Bot. Calif. ii. 239.

High mountains of Nevada and California.

53. *CAREX GMELINI*, Hooker, Bot. Beechey's Voy. 118, t. 27.

Differs from *C. Buxbaumii*, to which it is very closely related, by its shorter and thicker spikes, which are peduncled and darker colored, the ferruginous and smooth (not granulated) perigynium and the hispid awn of the scale. — Named for Johann Georg Gmelin, of St. Petersburg, 1719–55, author of *Flora Sibirica*. — Oregon, according to Boott, to Alaska, *Herb.* Siberia.

54. *CAREX BUXBAUMII*, Wahl. Königl. Acad. Handl. xxiv. 163.

Bears the name of Johann Christian Buxbaum, an early European botanist, 1693–1730. — Bogs throughout, from Georgia northward and across the continent. Europe.

B. *Rigidæ*, Fries, Summa, 72. (*Cæspitosæ*, Fries, l. c. *Stylosæ*, Bailey, Coulter's Man. 387.) Mostly stiff and rigid species, largely alpine or boreal, with

short and erect very closely flowered spikes, an entirely staminate terminal spike, and bracts possessing purple or black auricles at their base.—Species ranging from six to eighteen inches high, rarely higher. The typical form of *C. vulgaris* may be taken as the type of the group.

* *Stigmas three*, or in *C. heteroneura* perhaps often two.

55. *CAREX BIFIDA*, Boott; Olney in Proc. Am. Acad. vii. 394.

Much like *C. Buxbaumii*. Culm two or three feet high, sharply angled, smooth or nearly so: leaves two lines broad, pale, mostly shorter than the culm: bracts narrow, sheathless, the lowest leaf-like and exceeding the culm: pistillate spikes two to five, very short and thick (usually about a half-inch long), sessile and contiguous, somewhat glaucous: perigynium triangular-ovate, pale green, punctate, conspicuously nerved, the orifice cleft and the teeth ciliate, longer and broader than the purple white-ribbed, obtuse or muticous scale. Terminal spike rarely bearing a few pistillate flowers above.—California: Salinas Valley, in rather dry soil, *Brewer* 574; Pacheco Pass, Santa Clara Co., *Bolander* 4837; Red Mountains, Humboldt Co., *Bolander* 6476; Yreka Co., *E. L. Greene*.

56. *CAREX HETERONEURA*, W. Boott, Bot. Calif. ii. 239.

Culm slender but erect, nearly two feet high, sharply angled, scabrous or smooth: leaves narrow (two lines or less broad), flat, shorter than the stem: lower bract leaf-like, nearly as long as the culm, sheathless: pistillate spikes small (about a half-inch long and three lines or less broad), sessile or the lower ones on very short peduncles, more or less contiguous, whitish or yellowish: perigynium oval, smooth, straw-colored, few-nerved or nerveless, thin in texture, produced abruptly into a very short beak which is slightly emarginate, longer and broader than the obtuse or muticous purple white-ribbed scale. If the terminal spike were androgynous the species would strongly resemble *C. atrata*, var. *erecta*, although the perigynia are narrower and not so flat as in that variety. Variable in the nerving of the perigynia.—California, in the Sierras, *Bolander*; from Lake Tahoe to Bear River, *Kellogg*; Cœur d'Alene Lake, N. Idaho, *Watson* 437.

57. *CAREX RAYNOLDsii*, Dewey, Sill. Journ. xxxii. 39.

C. Lyallii, Boott, Ill. 150, t. 483.

Named for Capt. W. F. Reynolds, of an early government exploring expedition.—Mountains from Wyoming and Montana to California and Washington Territory.

58. *CAREX PARRYANA*, Dewey, Sill. Journ. xxviii. 239.

C. arctica, Dewey, l. c.

C. Hallii, Olney, Hayden's Rep. 1871, 496.

Bears the name of Capt. Parry, the Arctic explorer. — South Park, Colorado, *Wolf, Hall & Harbour* 617, and northward to Hudson's Bay. Rare.

59. *CAREX STYLOSA*, C. A. Meyer, Act. Acad. St. Petersb. i. 222, t. 12.

C. nigrifolia, Drejer, Revis. Crit. Car. 32.

Culm slender but erect, a foot or a foot and a half high, scabrous : leaves narrow (scarcely exceeding a line or a line and a half), mostly shorter than the culm : staminate spike one, an inch or less long, slender, very short-stalked : pistillate spikes two or three, a half-inch or less long, the lowest on a slender peduncle an inch or less in length, the others sessile or nearly so : lowest bract nearly or quite equalling the culm : perigynium turgid-ovate, fuscous, minutely punctate, nerveless, the entire orifice closed with the stiff and persistent style from which the stigmas are caducous, longer than the very obtuse black white-ribbed scale. A pretty species. — Fox Harbor, Labrador, *Allen* ; Greenland, *Vahl* ; Sitka, *Bongard, Mertens*.

Var. *VIRENS*.

Stouter : leaves broader : spikes all closely sessile and much thicker : perigynium green, much broader than in the species and the scales much narrower. Perhaps a good species. — Sauvie's Island, Oregon, and Mt. Adams, Washington Territory, at 5,000 feet, *Howell*.

60. *CAREX TOLMIEI*, Boott, Hook. Fl. Bor.-Am. ii. 224.

C. vulgaris, Olney, Proc. Am. Acad. 1872, 407.

Culm rigid, a foot to foot and a half high, triquetrous, smooth or nearly so : leaves ordinary, rough on the margins, mostly shorter than the culm : lower one or two bracts leafy and about equalling the culm, sheathless : spikes four to six or seven, the uppermost an inch or less long, staminate and mostly short-peduncled, the others mostly contiguous, oval or oblong (three fourths inch or less long), dark-colored, often staminate at the apex, the two or three lowest on slender peduncles an inch or two long, the others sessile : perigynium compressed-trigonus, oval or oval-oblong, pale and more or less discolored with purple dots, lightly nerved, produced into a very short and entire cylindrical beak, either longer or shorter than the obtuse or muticous purple white-ribbed scale. — Tolmie was an Indian trader and early botanical collector. — Columbia River, *Tolmie* ; Oregon, *Hall* 597 ; Northwest Coast, according to Boott ; Behring Straits, *Langsdorff*. Kamtschatka, *Wright*.

61. *CAREX NIGELLA*, Boott, Hook. Fl. Bor.-Am. ii. 225.

Smaller than the last: staminate spikes usually more than one: perigynium elliptical, the orifice bidentate: scales lanceolate and mucronate. — Columbia River, Tolmie.

* * *Stigmas two*, or very rarely a specimen may bear a few flowers with three stigmas.

62. *CAREX CÆSPITOSA*, Linn. Fl. Suec. ed. ii. 333.

C. Pacifica, Drejer, Fl. Ex. Hafn. 292.

C. Drejeri, Lang, Fl. Ratisb. 548.

Differs from *C. vulgaris* in its always single staminate spike, its short pistillate spikes (three fourths inch or less long), which are closely sessile and contiguous, and its round or ovate, gibbous, entirely nerveless, somewhat squarrose, pale perigynium. — Said by Boeckeler to occur in British America, and by Drejer to occur in Greenland. Specimens collected by Dr. Gairdner in Oregon and by Dr. Richardson on the arctic coast were referred here by Dr. Boott, but the specimens are too young for satisfactory identification. No. 593 of Hall's Oregon collection, distributed as *C. cæspitosa*, is *C. acuta*, var. *pallida*. Europe.

Var. *FILIFOLIA*, Boott, Ill. 182.

C. aperta, var. *angustifolia*, Boott, Hook. Fl. Bor.-Am. ii. 218.

Culms weak, often with basal sheaths somewhat reticulated: leaves weak and slender, more or less involute, about as long as the culm: spikes dark-colored, slender: perigynium more or less ovate, obscurely nerved, deciduous. — Fort Good Hope, Mackenzie's River, lat. 67°, *Dr. Richardson*; Cascade Mts., lat. about 49°, *Dr. Lyall*, a stouter form. The materials are far too scanty to allow of a satisfactory estimate of any of the American representatives of this species.

63. *CAREX VULGARIS*, Fries, Mant. iii. 155.

C. cæspitosa, Gooden. Linn. Trans. ii. 195, t. 21.

C. Goodenovii, Gay, Ann. Sci. Nat. 2d ser. xi. 191.

C. antucensis, Kunze, Suppl. Riedgr. 50, t. 13.

C. turfosa, Fries, Summa, 228.

C. limula? Gray, Man. 5th ed. 582.

Newfoundland, *Thaxter*, to New England and Wisconsin; Twin Lakes, Colorado, *Wolf*; Alaska, *Herb*.

Var. *JUNCELLA*, Fries, Summa, 230.

C. Kelloggii, W. Boott, Bot. Calif. ii. 240.

Wahsatch Mts., Utah, *Watson, Jones*; Union Co., Oregon, *Cusick*, and in British America, *Macoun*.

Var. *HYPERBOREA*, Boott, Ill. 167.

C. Bigelovii, Torr. ; Schwein. An. Tab.

C. Washingtoniana, Dewey, Sill. Journ. x. 272.

C. saxatilis, Dewey, Wood's Bot. ed. i. 581.

C. saxatilis, var. *Bigelovii*, Torr. Monogr. 397.

C. hyperborea, Drej. Revis. Crit. Car. 41.

C. rigida, var. *Bigelovii*, Tuckerman, Enum. Meth. 19.

C. limula, Fries, Summa, 229.

C. dubitata, Dewey, Wood's Bot. 1861, 755.

White Mountains to Greenland ; Mountains of Colorado and N. California to Alaska.

Var. *ALPINA*, Boott, Ill. 167.

C. rigida, Gooden. Linn. Trans. ii. 193, t. 22.

C. saxatilis of Scand. authors, not Linn.

Westward with the last.

Var. *BRACTEOSA*.

Culm slender, a foot or more high, rough, erect, bearing a long and leafy auricled bract about equalled by the flat pale leaves: pistillate spikes two or three, small and globular, black or nearly so, sessile, the one or two upper ones adjoining the small staminate spike (which is a half-inch or less long), the lowest one sometimes remote and borne in the axil of the long bract: perigynium much as in var. *alpina*, but smaller. — Ebbett's Pass, California, alt. 8,000 feet, *Brewer* 2015.

64. *CAREX DECIDUA*, Boott, Linn. Trans. xx. 119.

C. Andersoni, Boott, Hook. Fl. Antarct. ii. 364.

See Bot. Gaz. x. 204 (plate). — Differs from *C. vulgaris* as follows: spikes heavier: scales and perigynia deciduous: perigynium conspicuously stipitate and strongly nerved. — California, *Thurber*, according to Boott; Oregon, *Herb.* Founded upon specimens from Terra del Fuego and the Falkland Islands.

65. *CAREX NUDATA*, W. Boott, Bot. Calif. ii. 241.

Distinguished from *C. vulgaris* by its fibrillose sheaths and deciduous perigynium, and from both that species and *C. decidua* by its long and thin finely punctate, lightly nerved perigynium, which is empty in the upper half. Not well defined. The perigynia are often straw-colored and somewhat inflated. The fibrillose sheaths are conspicuous, a character which is supposed never to occur in *C. vulgaris*. Northern Lower California, *Orcutt*, to Trask River, Oregon, *Henderson*.

- C. *Acutæ*, Fries, Corp. 191. (*Prolixæ* and *Salinæ*, Fries, Summa, 71. *Aquatiles*, Fries, l. c. 72.) Species mostly larger than in the last group, mostly paludose, with green or light-colored large and long spikes; stigmas two. — Distinguished from the *Rigidæ* mostly by habit. One of the species, *C. subspathacea*, is small and boreal. *C. stricta* and *C. aquatilis* may be taken as types of the group. Some of the species bear more or less conspicuous auricles at the base of the bracts.

66. CAREX HALLII.

C. elata and *C. decidua*, Olney, Proc. Am. Acad. 1872, 407.

Culm sharply angled and rough, strict (eighteen inches to two feet high), longer than the narrow rough-margined leaves, the base purple-sheathed and enclosed in reticulated fibres: bracts all serrate on the margins, sheathless, the lower more or less leafy and often prolonged as high as the culm, the upper setaceous: spikes sessile, about five, the terminal staminate and usually more or less stalked, the others closely sessile and short: scales of the staminate spike very broad and obtuse, often emarginate, purplish-black: perigynium flat, almost white, elliptic with contracted ends, prominently few-nerved, smooth, the beak very short and entire but conspicuous, either much exceeding or about the length of the very obtuse black scale. — Oregon, Hall 594 and 598. In the latter specimen the white perigynia are much longer than the hidden scales, and the scales are less obtuse than in no. 594, which I take as the type. Distinguished at once from *C. senta*, Boott, by the broad and obtuse scales and smooth perigynia.

67. CAREX SENTA, Boott, Ill. 174.

Culm nearly two feet high, very rough on the sharp angles: leaves usually less than the culm, narrow, very rough on the margins: spikes about three, the terminal staminate and more or less stalked with long-linear and acute white-nerved scales, the others pistillate, sessile, an inch or so long, the lowest subtended by a short and very rough bract: perigynium flat, ovate, pointed, several-nerved, serrate on the margins above, the orifice entire, broader and longer than the narrow and acute or mucous scale. — California, Santa Inez Mts., 20 miles northeast of Santa Barbara, Brewer 350, and Santa Susanna Mts., Brewer 218. (The no. 218 was referred to *C. Jamesii* in Bot. Calif.)

68. CAREX INVISA.

C. podocarpa, W. Boott, Bot. Calif. ii. 245, excl. descr.

Culm fifteen inches to two feet high, sharply angled, erect, smooth: leaves nearly as long as the culm, two lines wide, roughish on the margins, short-pointed: spikes four or five, all sessile or the two lowest on short peduncles and erect, oblong and somewhat narrowed

at base (an inch long) or short and nearly globular, the upper one or two staminate and short, the others all approximate or contiguous and pistillate: bracts short and sheathless: perigynium elliptic-ovate, prominently few-nerved, green and over-colored with black-purple blotches, flat, very short-pointed, the orifice entire or nearly so, broader and commonly a little longer than the black-purple and very conspicuously white-nerved apiculate scale. Varies somewhat, especially in the length of the spikes and the coloring of the scale. The aspect of the spikes is much like that of the spikes of *C. luzulæfolia* and *C. frigida*. The sheathless bracts at once distinguish it from those species. The spikes in some of the immature forms of *C. Mertensii* closely resemble those of *C. invisæ*. — California: Summit Camp, Kellogg, the type growing "in exceedingly tough and matted clumps," Ebbett's Pass, Brewer 2084 and 2076, Big Trees, Hillebrand, Lassen's Peak above snow, Brewer 2186 (a globular-spiked form), Carson Pass, Brewer 2126; Selkirk Range, British Columbia, Macoun.

69. *CAREX LACINIATA*, Boott, Ill. 175, t. 594.

C. Wilkesii, Torr. Bot. Wilkes Exped. 477, t. 17.

Culm stout and very sharply angled, rough, two feet to three and a half feet high: leaves stiff and carinate, pale, long: lower sheaths fibrillose: bracts sheathless, leaf-like, the lowest very long: spikes four to six, mostly long (two or three inches, rarely an inch), evenly cylindrical and densely flowered, commonly short-peduncled or the upper ones sessile, erect or somewhat cernuous (the lowest often long-peduncled), yellowish or fuscous: perigynium oval or ovate or nearly orbicular, more or less obscurely nerved, often minutely serrate on the margins above, spreading, abruptly contracted into a short entire or short-toothed beak, much broader and usually shorter than the purple broadly white-nerved and hispid aristate scale. — In the coast ranges and near the sea from Santa Barbara, California, to Rogue River at Grant's Pass, Oregon, Howell. Perhaps also in Provo Cañon, N. Utah, Watson 1245.

70. *CAREX ULTRA*.

C. hispida, W. Boott, Bot. Gaz. ix. 89, in part.

Culm stout and rigid (two to three feet high), rather obtusely 3-angled, smooth: leaves a fourth inch or more wide, rigid, pale, as long as the culm or longer, carinate, the margins serrate: lower bract leafy, short-sheathed, the upper very abruptly pointed from a broad and clasping base and shorter than the spike: spikes six to eight, all

long (two to six inches) and erect, the three or four upper ones staminate and either aggregated or scattered, the others pistillate, sessile, or the lower short-stalked: perigynium ovate or elliptic, flat, pale, usually sprinkled with ferruginous dots, nerveless or nearly so, smooth, ending abruptly in a short and straight entire beak, broader and either longer or shorter than the narrow white-ribbed acute scale. — A stouter plant than *C. laciniata*, with broader leaves which are very conspicuously serrate, shorter bracts which clasp the bases of the spikes, larger spikes, the staminate more numerous, the perigynia pale and the scales not aristate. — S. Arizona, *Lemmon* 2901, 2902, also coll. of 1880.

71. *CAREX JAMESII*, Torrey, Monogr. 398.

Bears the name of Dr. E. James, botanist to Long's Exploring Expedition. — Colorado, Utah, Nebraska, and Oregon, and probably *Brewer* 1970 from Silver Valley, California.

Var. *NEBRASKENSIS*, Bailey, Carex Cat. Suppl.

C. Nebraskaensis, Dewey, Sill. Journ. xviii. 102.

Colorado and Utah and southward.

72. *CAREX AQUATILIS*, Wahl. Königl. Acad. Handl. xxiv. 165.

From New England across the continent and northward.

Var. *EPIGEIOS*, Læstadius, Vet. Ac. Handl. 1822, 339.

C. borealis, Lang, Syll. 398.

C. anguillata, Drej. Rev. Crit. Car. 36.

C. stans, Drej. l. c. 40.

C. aquatilis, var. *sphagnophila*, Anderss. Cyp. Scand. 46.

C. aquatilis, var. *minor*, Boott, Ill. 163.

From Colorado to the Arctic Coast and Greenland.

73. *CAREX STRICTA*, Lamarck, Dict. de Bot. iii. 387.

C. acuta, Muhl. Descr. Gram. 263; Torr.

C. Virginiana, Smith, Rees' Cycl. vii. sp. 100.

C. stricta, Dewey, Sill. Journ. x. 269.

C. commutata, Gay, Ann. Sci. Nat. 2d ser. xi. 198.

C. angustata, Boott, Hook. Fl. Bor.-Am. ii. 218.

C. strictior, Dewey, Wood's Cl. Book, 755.

C. Watsoniana and *C. Kelvingtoniana*, Steudel, Cyper. Plant. 215.

C. xerocarpa, S. H. Wright, Sill. Journ. 2d ser. xlii. 334.

C. Virginiana, var. *elongata*, Boeckeler, Linnæa, xl. 432.

Immensely variable. — New England to Georgia and across the continent to California; Texas, *Wright*. Specimens from British Columbia, *Macoun*, are probably to be referred here.

Var. EMORYI.

C. Emoryi, Dewey, Bot. Mex. Bound. 230.

C. acuta, var., Reverchon's distr. Texan pl. 1407.

Spikes more numerous (six to eight), more densely flowered, mostly obtuse if not staminate at the apex, all or the lowest subtended by very long and leaf-like bracts. — Texas; margins of Blanco River, Wright, New Braunfels, Lindheimer, "along the streams, Cherokee Creek, Llano Co.," Reverchon. Wright's specimens, upon which Dewey founded the species, bear much longer and more leafy bracts than the other specimens which I have seen.

C. STRICTA + *SALINA* (*C. spiculosa*?, W. Boott, Bot. Gaz. ix. 88. "*Forma sterilis salinæ*," Christ, Cat. Car. Eur. 7). Brackish marshes near Boston, Mass., W. Boott, Morong.

74. *CAREX APERTA*, Boott, Hook. Fl. Bor.-Am. ii. 218, t. 219.

C. Haydenii, Dewey, Sill. Journ. xviii. 103.

C. aperta, var. *minor*, Olney, Exsicc. fasc. v. no. 15.

Apparently not common. A smaller plant than *C. stricta*, with shorter spikes and very conspicuous spreading scales. — Northeastern United States; also Oregon, Washington Terr., and Idaho, from several collectors. Founded upon specimens from the far Northwest. Perhaps the eastern United States plant is not *C. aperta*.

Specimens from Colorado from several collectors appear to combine characters of *C. aquatilis*, *C. stricta*, *C. aperta*, and *C. interrupta*. At different times I have referred these specimens to different species. Four different specimens collected last year by H. N. Patterson I named *C. aquatilis*. Specimens collected in 1872 by C. C. Parry evidently belong to the same species with Patterson's, and Olney says that *Hall & Harbour* 616 is the same as Parry's. No. 582 of Powell's Expl. Exped. is the same. I am now at a loss to make any satisfactory determination of any of these specimens.

75. *CAREX INTERRUPTA*, Boeckeler, Linnæa, xl. 432.

C. angustata, var. *verticillata*, Boott, Hook. Fl. Bor.-Am. ii. 218.

C. verticillata, Boott, Ill. 67, t. 183, f. 2, not Zoll. & Mor.

Differs from *C. aperta* and *C. stricta* in its stoloniferous habit, nearly smooth and shorter culm, its more approximated spikes which are usually much attenuated at the base, the appressed and obtuse or mucous scales, and especially in the small perigynium which is about three fourths of a line long and half a line wide. — Oregon, Scouler, Howell, Henderson, etc.

76. *CAREX LENTICULARIS*, Michx. Fl. Bor.-Am. ii. 172.*C. concolor*, R. Br. Suppl. App. Parry's Voy. 218?*C. lenticularis*, vars. *Albi-montana* and *Blakei*, Dewey, Wood's Bot. 1860, 755.

Labrador, lat. $51\frac{1}{2}^{\circ}$, *Allen*, *Storer*; N. Maine, *Blake*, *Smith*; White Mts., *Pringle*, etc.; Mt. Mansfield, Vt., *Pringle*; Northern New York to N. Michigan, *Loring*, and Isle Royale, *Porter*; Saskatchewan, *Bourgeau*, and northward to Bear Lake, *Richardson*; Washington Terr., *Lyall*; California in the Sierras, Yosemite, *Bolander*, Silver Lake, *Brewer*.

77. *CAREX ACUTA*, Linn. Sp. Pl. 1388.*C. aperta*, var. *divaricata*, Bailey, Bot. Gaz. ix. 119, in part.

Plant pale and mostly very smooth: culm erect, eighteen inches to two feet high, smooth or rough above: sheaths destitute of fibrillose reticulations: leaves flat and thin, about as long as the culm, mostly loose in aspect: the lower one or two bracts flat and leaf-like, about equalling the culm, the margins mostly serrate, often very conspicuously so: spikes four or five, the upper one or two staminate, all approximate and erect or very nearly so, all sessile or the lower short-peduncled (one to three inches long, one fourth inch thick): perigynium thin and soft and somewhat inflated, yellowish, granulated, nerved, the small beak entire, broader and either shorter or longer than the dark obtuse or mucous scale. — Oregon, Portland, *Kellogg & Harford* 1081, Deschutes River, *Howell* 935, base of Mt. Hood, *L. F. Henderson*; Sitka, Mertens, fide Boeckeler; Greenland, according to Drejer, probably in some of its boreal varieties if at all. Europe.

Var. *PROLIXA*, Hornem. Plantel. ed. iv.*C. proluxa*, Fries, Mant. iii. 150.

Leaves narrower and shorter, not so flat, more rigid: spikes all peduncled or the upper one sessile, the lower more or less cernuous, an inch or inch and a half long and nearly one fourth inch thick when mature: scales very slender and produced into a point which surpasses the more or less ferruginous perigynium. — Oregon, Sauvie's Island, *Howell*, along the Willamette and Columbia Rivers, *Henderson*; bottom lands of Columbia River, Klikitat Co., Washington Terr., *Suksdorf*. — Although the plant does not agree in all characters with Scandinavian specimens, I refer it here pending the accumulation of more material. This is the "hay carex" of the Columbia. It forms whole meadows, and its second growth produces hundreds of tons of excellent hay. Probably the most valuable plant of the genus. Often

mistaken for *C. cryptocarpa*, small forms of which it very closely resembles. It differs from that species in its shorter peduncles (the upper two or three not over a half-inch long) and its nearly erect upper spikes, its nerveless perigynium which is sprinkled with ferruginous dots, and the much shorter scales (seldom over half as long again as the perigynium).

Var. *PALLIDA*, Boott, Ill. 166.

C. cæspitosa, Olney, Proc. Am. Acad. 1872, 407.

Spikes shorter and narrower than in the species, often an inch or less long, "pale from the predominance of the perigynia over the squamæ": perigynium greenish, strongly nerved, resembling that of *C. lenticularis*. — Oregon, Lyall, *Hall* 593; Summit Camp, Calif., *Dr. Kellogg*; and probably also specimens distributed as *C. lenticularis* by Olney from Maine, coll. by *Blake* or *Porter*. Little known; probably to be associated with some other species.

78. *Carex glauca*, Scopoli, Fl. Germ. 455.

Glaucous: culm smooth, a foot or two high, erect: leaves mostly shorter than the culm, narrow, more or less rigid, carinate; lower bract leafy: spikes densely cylindrical, all peduncled, nodding: perigynium round-ovate, lightly nerved, clothed with short hairs or granulated, broader and either longer or shorter than the dark mostly obtuse scale. — Nova Scotia, *Macoun*, Windsor, 1868, *Fowler*; London, Ontario, Burgess. Introduced from Europe.

79. *CAREX BARRATTII*, Schweinitz & Torrey, Monogr. 361.

C. flacca, Carey, Gray's Man. 1848, 549; Chapm. Flora, 542.

"*C. littoralis*, Schw.," Olney, Exsicc. fasc. i. no. 17.

Named for Dr. Joseph Barratt, of Middletown, Conn., a critical student of the sedges and willows. — Marshes near the coast from New Jersey to North Carolina.

80. *CAREX TORTA*, Boott; Tuckerman, Enum. Meth. 11; Ill. 63, t. 169.

Var. *composita*, Porter; Olney, Exsicc. fasc. iii. no. 6.

Northern New England to North Carolina, in cold swamps and along the mountains. Local.

81. *CAREX PRASINA*, Wahl. Königl. Acad. Handl. xxiv. 161; Fl. Lapp. 249.

C. miliacea, Muhl.; Willd. Sp. Pl. iv. 290.

Meadows and bogs, Vermont to Georgia.

82. *CAREX SALINA*, Wahl. Fl. Lapp. 246.

C. cuspidata, Wahl. Königl. Acad. Handl. xxiv. 164.

C. stricta, Hook. & Arn. Bot. Beechey's Voy. 131.

C. recta, Boott, Hook. Fl. Bor.-Am. ii. 220, t. 222.

C. hamatolepis, Drej. Rev. Crit. Car. 44.

Wahlenberg's original *C. salina* was reduced by himself to the var. *mutica*, and the more developed form elevated to be the type in Flora Lapponica. — In salt marshes near the coast, from Boston to Labrador; about Hudson's Bay according to Boott, Kotzebue's Sound, *Herb. N. Europe*.

Var. *MUTICA*, Wahl. Fl. Lapp. 246.

C. salina, Wahl. Königl. Acad. Handl. xxiv. 165.

C. lanceata, Dewey, Sill. Journ. xxix. 249.

C. reducta, Drej. Rev. Crit. Car. 36.

C. salina, var. *minor*, Boott, in part, Ill. 160, t. 528.

Distinguished from the species by its smaller size (ranging in height from six to eighteen inches), narrow leaves, few spikes which are slender and often loosely flowered and usually sessile or nearly so, its narrow fewer-nerved elliptical or ovate-lanceolate perigynium, and the shorter muticous scale. — British America, Cumberland House and Hudson's Bay, *Drummond*, and probably no. 4702 *Bolander* from Mendocino City, Calif.; Greenland, *Drejer*. N. Europe.*

83. *CAREX SUBSPATHACEA*, Wormskjold, Fl. Dan. ix. 4, t. 1530 (1818).

C. Hoppneri, Boott, Hook. Fl. Bor.-Am. ii. 219, t. 220.

* *CAREX AMBUSTA*, Boott, Ill. 64, t. 172 (*C. salina*, var. *ambusta*, Bailey, *Carex Cat.*). Dr. Boott proposed this species upon a plant from Herb. Prescott without a habitat, venturing the opinion that it came from Sitka or its neighborhood. Later on in his Illustrations he expressed the opinion that it is inseparable from *C. salina*, and I consequently made it a variety of that species in my preliminary catalogue. Last year I received, through Dr. Geo. Vasey, a peculiar *Carex* from Ungava Bay, N. Labrador, collected by L. M. Turner. It resembled *C. saxatilis* very closely in general habit, but differed widely in the character of its perigynia. A subsequent search through the Gray Herbarium discovered among the specimens of *C. saxatilis* other plants from near the Western coast to match the Labrador specimens. These plants are to be referred to *C. ambusta*, to be distinguished from *C. saxatilis*, which they imitate closely, by the nearly lanceolate, long-pointed and spreading perigynia, which possess none of that shining, papery, and inflated appearance so characteristic of that species, and by the long and often weak peduncles of the pistillate spikes. I see no reason for uniting this plant with *C. salina*. I had at first thought it to be a good species, but recent material leads me to think that it is a form of *C. physocarpa*. The specimens which I have referred here are from Sitka, *Dr. Mertens*; Unalaska, *Harrington*; Northern British Columbia, *Rothrock*; Ungava Bay, N. Labrador, *Turner*.

C. salina, var. *subspathacea*, Tuckerman, Enum. Meth. 12.

C. salina, var. *minor*, Boott, in part, Ill. t. 529 and 530.

The most reduced of the *Acutæ*. Culm one to six inches high, rigid, smooth, shorter than the very narrow stiff leaves: staminate spike one, usually more or less peduncled: pistillate spikes one to three, a half-inch long or less, sessile or very nearly so in the axils of sheathless bracts (rarely a short sheath in the lower bract of large specimens): perigynia ovate, more or less nerved, usually exceeding the obtuse or barely pointed scale. — Cumberland House and Hudson's Bay, *Herb.*; Greenland, Wormskjold, etc. Shores of the White Sea.

D. *Cryptocarpæ*, Tuckerman, Enum. Meth. 11. (*Spiculosæ*, Fries, Summa, 71. *Maritimæ*, Nyman, Consp. Fl. Eur. 776. *Incisæ*, Olney, Exsicc. fasc. iii.) Large species with cernuous or drooping large spikes which bear very long and conspicuous mostly dark scales; stigmas two.

84. *CAREX CRYPTOCARPA*, C. A. Meyer, Mem. Acad. St. Petersb. i. 226, t. 14.

C. Scouleri, Torr. Monogr. 399.

C. filipendula, Drej. Rev. Crit. Car. 46.

C. salina, Boott, Hook. Fl. Bor.-Am. ii. 219.

Culm two feet or more high, sharply angled, smooth or rough just below the spikes; leaves ordinary, narrow and flat: spikes all drooping on filiform peduncles from one to three inches long, a half-inch or more of the apex staminate, rather lax-flowered, especially at the base, very dark brown or black, two inches or less in height, and varying from broadly oblong (one inch by one third inch) to narrowly cylindrical (two inches by one fifth inch): staminate spikes two or three, the lateral ones usually peduncled: perigynium oval or oboval, yellowish, lightly nerved, contracted into a very short and entire beak, twice or thrice shorter than the lanceolate dark brown or black scale. Variable. Not well understood. — Oregon to Alaska; Greenland. Adjacent Asia. Norway.

85. *CAREX SITCHENSIS*, Prescott, in Bongard's Obs. Sitcha in Mem. Acad. St. Petersb. ser. 6, ii. 168.

Larger and much stouter than the last, two to five feet high, the culm very sharply angled, rough above or throughout on the angles: leaves very long and rigid and carinate: spikes long and thick (three or four inches long and one third inch thick), often bending over, more densely flowered and comparatively shorter peduncled: lateral staminate spikes sessile: perigynium nerveless and hard: scales much as in the last, only blunter. The aspect of the spikes is variable, owing to the size of the scales. They often closely resemble thick

spikes of *C. crinita*. — Along the coast, from San Francisco to Alaska.

86. *CAREX BARBARÆ*, Dewey, Bot. Mex. Bound. 231.

C. Schottii, Dewey, l. c.

C. Prescottiana, Olney, Bot. King's Rep. 369; W. Boott, Bot. Calif. ii. 244.

Slender and lax but mostly erect, two feet or more high, glaucous: leaves surpassing the culm: bracts leafy: pistillate spikes four or more, very long-linear (three to eight inches long), cernuous, more or less slenderly peduncled: scales dark, obtuse or muticous: perigynium small, appressed, pale, more or less attenuated below, abruptly contracted into a short and entire beak, nearly nerveless, shorter than the scale. Known only from a few imperfect and immature specimens. Its lax habit and very much prolonged linear spikes are its best known characters. The Oregon plant is the most mature of any. Its scales are narrower than in the other specimens. — "Banks of streams, Santa Barbara, Cal.," Parry, 1850, the original station for *C. Barbaræ* and *C. Schottii*; Los Angeles, Calif., Prof. Wood, ex. Herb. Dewey; Nasqually, Oregon, Wilkes Exped. 308; and according to Olney (King's Rep. 369), "Indian Territory on the False Washita, between Fort Cobb and Fort Arbuckle, Dr. Palmer." One of Hayden's Nebraska plants was named *C. Barbaræ* by Dewey, but Olney declares that it is not the same as the original species. I have seen this plant, and although it appears to accord with the description of *C. Barbaræ* it is probably a large immature *C. Jamesii*.

87. *CAREX MARITIMA*, Müller, Fl. Dan. t. 703.

C. paleacea, Wahl. Königl. Acad. Handl. xxiv. 164.

Salt marshes along the coast, from Boston to Newfoundland and Hudson's Bay. Europe.

88. *CAREX CRINITA*, Lamarck, Dict. de Bot. iii. 393.

C. paleacea of authors, not Wahl.

C. crinita, var. *paleacea*, Dewey, Sill. Journ. x. 270.

C. Mitchelliana, M. A. Curtis, Sill. Journ. xlv. 84.

C. crinita, var. *minor*, Boott, Ill. 18.

C. Porteri, Olney, Exsicc. fasc. v.

C. crinita, var. *angusta*, Olney, l. c.

Canada to Florida and Texas.

Var. *GYNANDRA*, Schweinitz & Torrey, Monogr. 360.

C. gynandra, Schwein. An. Tab.

C. crinita, var. *Caroliniana*, Olney, Exsicc. fasc. iii. no. 8.

Too near the species. — New England to Michigan and Florida.

89. *CAREX VERRUCOSA*, Muhl. Descr. Gram. 261.

C. glaucescens, Ell. Sk. Bot. ii. 553.

C. glaucescens, var. *androgyna*, Curtiss, Sill. Journ. xliv. 84, and
var. *polystachya*, Sill. Journ. 2d ser. vii. 410.

Margins of ponds, mostly in pine barrens, Virginia to Florida and Texas.

90. *CAREX EHRENBURGIANA*, Boeckeler, Linnæa, xli. 175.

"Somewhat glaucous-green: culm strict and very rigid (one to two and a half feet high and as thick as a fowl's quill), acutely angled, scabrous above: leaves very rigid, shorter than the culm (one to two and a half lines wide), shortly acuminate, carinate, many striate, rough above, the margins somewhat revolute: spikes 7-10, red-ferruginous, all more or less peduncled, narrowly cylindrical, acutish, densely flowered (one to four feet long and two to two and a half lines wide), the upper two or three staminate, crowded and nodding with the two lowest of them often short, the others approximate, androgynous, with the staminate flowers borne on the prolonged apex, borne in twos or threes (the lowest solitary), and long exsertly peduncled, some of the lower ones more or less branched at the base: bracts leafy, nearly sheathless, the lower about equalling the culm: scales broadly ovate or oval, obtuse or muticous, or the keel sometimes prolonged into a short cusp, dark-colored, spreading, as are also the perigynia: perigynium small (scarcely a line long), shorter than the scale, smooth and nerveless, broadly obovate or nearly orbicular, attenuated at the base, pale straw-colored, punctate with resinous dots, ending abruptly in a short, nearly entire beak: stigmas three or two." Transition to the *Polystachya*. — Mexico, C. Ehrenberg.

91. *CAREX SCABERRIMA*, Scheele, Linnæa, xxii. 345.

Known only from Scheele's description: —

"Culm a foot or eighteen inches high, lax, triquetrous, striate, rough above: leaves flat, glabrous, elongated, three-nerved, striate, narrowly acuminate, the mid-nerve very rough, the sheaths transversely rugose-plicate: spikes five, linear-cylindrical, remote, the two upper short, obtuse, sessile, and staminate, the others longer, androgynous, and acute: androgynous spikes peduncled, densely many-flowered, staminate at the top, the lowest sub-radical, very long, the remainder very short, pedunculate: uppermost bract small, setaceous, the second long-awned with a green mid-nerve, shorter than the spike: pistillate scales ovate at the base, white-hyaline, lanceolate, the nerve excurrent, cuspidate-aristate, longer than the perigynium: staminate scales narrow, oblong, whitish, membranaceous, nerve green, very short, mucro-

nate: perigynium rhomboid-obovate or rhomboid-oblong, glabrous, orifice toothed: stigmas two. Habit of *C. strigosa*, Huds. — Neubraunfels, Texas, Roemer."

E. *Ferrugineæ*, Tuckerman, Enum. Meth. 12. (*Fuliginosæ*, Tuckerm. l. c. *Frigidæ*, Fries, Summa, 70.) Plants smaller and more slender than in the preceding groups; spikes small, an inch or less long, the upper ones often androgynous; perigynium tapering into a conspicuous point, often rough on the angles, dark-colored; bracts conspicuously sheathing; stigmas usually three. — A well-marked and peculiar group.

92. *CAREX FRIGIDA*, Allioni, Fl. Ped. ii. 270.

C. sempervirens, Olney, Prelim. Cat. Wheeler's Surv.

Varies in the width of the leaves, thickness, and disposition of the spikes. Perigynium sometimes smooth. The American representatives of this species are not well understood. — Utah, Cottonwood Cañon, Watson 1255? "Pacific slope," Parry, 347; Oregon, Hall 600 and 601, Henderson (Mt. Hood), Howell; mountains about the head of Sacramento River, California, Pringle. Watson's 1255 may belong to *C. luzulæfolia*.

93. *CAREX LUZULÆFOLIA*, W. Boott, Bot. Calif. ii. 250.

Distinguished from the last by its stouter culm and usually greater height (fifteen to thirty inches), its heavier spikes, and especially by the very numerous, loosely sheathing straw-colored thick and broad radical leaves (one fourth to one half inch broad), and the more leafy bracts. Perhaps a large form of the last. — California, in the Sierra Nevada at high altitudes: Summit Camp, Dr. Kellogg, Ebbett's Pass and northward, Brewer, nos. 2019, 2131, 1701, Yosemite, Bolander 6219; S. E. Oregon, Cusick.

94. *CAREX LUZULINA*, Olney, Proc. Am. Acad. vii. 395.

Distinguished from *C. frigida* by the aggregated and sessile spikes, only the lower being distinct and exserted, and by the very broad-based and short bracts: perigynium apparently less spreading and broader than in *C. frigida*. — Mendocino City, California, Bolander 4740.

95. *CAREX GYNODYNAMA*, Olney, Proc. Am. Acad. vii. 394.

Scales very broad and obtuse or the mid-nerve excurrent, mostly shorter than the perigynium, which is broader than that of *C. frigida*, very short-beaked and hairy on the upper half. — Mendocino City, California, Bolander 4700.

96. *CAREX PETRICOSA*, Dewey, Sill. Journ. xxix. 246, f. 70.

Founded upon very young specimens; consequently the characters are unknown. Five to eight inches high, rigid, culm smooth: leaves

narrow (about a line wide), long-pointed, about the length of the culm: spikes three to five, oblong, erect, (four to ten lines long, one to two lines wide), the upper ones contiguous, the lowest one or two on exserted peduncles, the one or two uppermost all staminate or staminate at the apex: scales ovate, obtuse or nearly so, purple with a green rib: perigynium slightly hairy above, very short-beaked. The intermediate spikes often have staminate flowers at base or apex. — "Summit of the Rocky Mts.," *Drummond* 283 (lat. about 59°).

97. *CAREX FRANKLINII*, Boott, Hook. Fl. Bor.-Am. ii. 217, t. 218.

Culm stiff and tall (thirty inches or more high), obtusely angled, smooth or very nearly so, far surpassing the narrow and loose upright leaves: spikes six to eight, the five or six uppermost linear and crowded, either staminate at the apex or throughout, the two or three lowest ovate, more or less exserted, staminate at the apex: bracts short and narrow: perigynium ovate, very short-beaked, hairy on the angles above, longer than the broad and more or less obtuse scale. A fine species. Bears the name of the unfortunate Sir John Franklin. — Rocky Mountains, about lat. 59°, *Drummond*.

98. *CAREX MISANDRA*, R. Brown, Suppl. Parry's Voy. 283.

C. fuliginosa, Sternb. & Hoppe, Act. Soc. Bot. Ratisbon. i. 159, t. 3.

C. fuliginosa, var. *misandra*, Lang, Linnæa (1851), xxiv. 597.

C. misandra, var. *elatior*, Lange, Fl. Grœn. 140.

C. misandra is the more recent name, but Sternberg & Hoppe applied the name *C. fuliginosa* to this species thinking it to be the *C. fuliginosa* of Schkuhr, which is *C. frigida* of Allioni. The species was first distinguished by Robert Brown. — Varies greatly in height, from one inch to a foot, and in the shape and color of the spikes. Two or three spikes are sometimes borne in the upper sheath. — Gray's Peak, Colorado, *M. E. Jones, Patterson* ("in dense sod"), and throughout Arctic America.

99. *CAREX ATROFUSCA*, Schkuhr, Riedgr. 106, f. 82.

C. ustulata, Wahl. Königl. Acad. Handl. xxiv. 156.

C. ustulata, var. *minor*, Boott, Ill. 71, t. 194.

Distinguished at once from *C. misandra* by the very flat and broadly ovate and abruptly beaked perigynium, which is usually broader and longer than the scale: spikes short and thick, mostly ovate or ovate-oblong, on peduncles an inch or less long: terminal spike staminate or androgynous. — Greenland according to Boeckeler. N. Europe.

F. *Pendulinae*, Fries, Corp. 190. (*Limosæ* and *Ustulatæ*, Tuckerman, Enum. Meth. 12.) Differs from the last group in habit and in the sheathless bracts and whitish, more or less granulated, nearly pointless perigynium.

100. *CAREX PODOCARPA*, R. Brown, App. Frank. Nar. ed. ii. 36.

C. macrochæta, C. A. Meyer, Mem. Acad. St. Petersburg. i. 224, t. 13.

C. spectabilis, Dewey, Sill. Journ. xxix. 248, f. 76.

Culm one to two feet high, rather weak, roughish: leaves mostly shorter than the culm, the lower ones an inch or two long or reduced to mere sheaths at the base of the culm: spikes three to five, the staminate one or two, the others sometimes staminate at the top, an inch and a half or less long, and a fourth or a third inch thick, the lower one or two nutant on long peduncles, the upper ones more or less erect: scales black, usually produced into a long whitish thread-like awn (which is often a half-inch long!): perigynium elliptic-lanceolate (two to two and a half lines long and half a line or more broad), scarcely beaked, entire at the orifice, nerved, whitish and sprinkled with purple dots: stigmas often three. A very distinct species. *C. podocarpa*, Bot. Calif., is *C. invisæ*, Bailey. Transition to the *Cryptocarpæ*. — Mountains of British America to Alaska. Adjacent Asia.

101. *CAREX MAGELLANICA*, Lamarck, Dict. de Bot. iii. 385.

C. irrigua, Smith in Hoppe, Caric. 92.

C. limosa, var. *irrigua*, Wahl. Königl. Acad. Handl. xxiv. 162.

C. limosa, var. *irrigata*, Wahl. Fl. Lapp. 243, t. 15.

C. paupercula, Michx. Fl. Bor.-Am. ii. 172.

C. lenticularis, Dewey, Sill. Journ. vii. 273.

C. cernua, Phil. Linnæa, xxix. 83.

In peat bogs, Newfoundland, *La Pylaie*, to Pennsylvania, *Porter*, to Michigan and Minnesota; Uinta Mts., N. Utah, *Watson*; Arctic America according to *Boott*. S. America. Europe.

102. *CAREX RARIFLORA*, Smith, Engl. Bot. t. 2516.

C. limosa, var. *rariflora*, Wahl. Königl. Acad. Handl. xxiv. 162.

Greenland, *Warming & Holm*, *Krumlein*, etc.; Labrador, *Allen*, *Storer*; Mt. Katahdin, Me., *Goodale*; St. Louis Co., Minnesota, *Sandberg*. Europe.

103. *CAREX LIMOSA*, Linn. Sp. Pl. 977.

C. laxa, Dewey, Sill. Journ. xxvi. 376.

C. limosa, var. *Painei*, Dewey, Sill. Journ. 2d ser. xxix. 71.

Peat bogs from Arctic America to New Jersey and Ohio; Rocky

Mts. of British America ; Pend d'Oreille River, Idaho, *Lyall* ; N. W. Coast, fide Boott. Europe.

Var. *STYGIA*.

C. stygia, Fries, Mant. iii. 141.

Spikes mostly thicker and more drooping : scales very black, longer pointed. — Alaska, *Dall*, *Mertens*, *Bischoff*, Shumagin I., *Harrington*. Finmark.

Section IV. VIGNEASTRÆ, Tuckerman, Enum. Meth. 10. Peduncles branching (producing spikelets) or two or more borne in one axil ; spikes or spikelets all staminate at the top ; perigynium mostly compressed and slender ; stigmas usually three. — A singular section, peculiar to warm climates. It reaches its highest development in India and adjacent regions. None of the species have been found within the limits of the United States.

A. *Polystachyæ*, Tuckerman, l. c. 10. Habit much like that of the Debiles ; spikes and spikelets long and slender, mostly all long-peduncled, usually two or more simple ones from each sheath. — Tall species, represented in Atlantic countries by the species which follow, and *C. elata*, Lowe, of Madeira.

104. *CAREX SPILOCARPA*, Steudel, Plant. Cyper. 195.

C. maculata, Liebm. Mex. Halv. 80, not Boott.

“Culm two to three feet high, triquetrous, glabrous ; leaves shorter than the culm, broadly linear (four to five lines wide), carinate, rigid, glaucous, the margins and keel rough above, the sheaths membranaceous, flaccid : spikes seven to ten, usually two from the axil of one bract, the uppermost solitary, lowest remote, all erect, becoming pendulous, one to one and a half inches long, densely flowered, cylindrical, long-peduncled, the peduncles filiform, flexuose and scabrous (one to four inches long) : bracts equalling the spikes, the sheaths withered in front, the orifice cut : staminate scales broadly ovate, obtuse, the mid-nerve carinate and yellowish green, the lateral nerves nearly dark purple, margin hyaline : pistillate scales spreading, ovate, about equalling the perigynium : perigynium slightly compressed, plano-convex, elliptical, short-beaked, nerved, the angles acute and slightly scabrous, the upper side and apex spotted with dark purple, otherwise fuscous, sides roughly granulate, beak bifid : achenium elliptic-trigonus, sides convex, very slightly punctulate.” — Orizaba, South Mexico, at 8,000 to 10,000 feet, Sept., Liebmann.

105. *CAREX CORTESII*, Liebmann, Mex. Halv. 80.

“Culm two to two and a half feet high, triquetrous, rough on the

angles: leaves longer than the culm, glaucous green, carinate below, nerved above, rough on the margins, sheaths light cinnamon-color in front, thinly membranaceous: spikes numerous (about 20), three in the axils of the bract, long-peduncled, two inches long, flexuose, nearly cylindrical, acute, densely flowered: bracts very long, sheathing, the sheaths deeply cut, the upper setaceous, shorter than the spike: peduncles filiform, scabrous, the lowest three inches long, the others shorter: staminate scales ovate-lanceolate, acute, one-nerved, nerve carinate and green, margin hyaline: pistillate scales spreading, oblong-ovate, concave, shortly mucronate, mucro rough, mid-nerve green, margin above ciliolate: perigynium equalling the scale, narrowly elliptical, trigonous, slightly compressed, biconvex, 3-ribbed, dull straw-colored, glabrous, beak bifid: achenium elliptical, trigonous, yellowish, smooth, sides slightly convex." — Named in memory of Hernando Cortez, the early explorer, discoverer of Mt. Sempoaltepec. — Cerro de Sempoaltepec, Oaxaca, South Mexico, at 10,000 feet, June and July, Liebmann.

106. *CAREX CHORDALIS*, Liebmann, l. c. 81.

"Culm a foot and a half high, triquetrous, rough on the angles above: leaves longer than the culm (two feet long or more), narrowly linear, convolute, carinate, pale green, nerved above, margins scabrous, the sheaths in front thinly membranaceous, light cinnamon in color: spikes many (20-30), long-peduncled and long-bracted, three or four in the axil of each bract, three inches long, slender, flexuose, densely flowered: bracts very long (two and a half feet), the upper becoming shorter and setaceous, sheathing, the sheaths in front membranaceous, reddish, cut: peduncles filiform, scabrous, flexuose, two to three inches long: staminate scales oblong, acute, one-nerved, the nerve straw-colored: pistillate scales twice smaller than the staminate, long-ovate, short-mucronate, mid-nerve green, lateral nerve dark purple: perigynium elliptical, oblique, slightly compressed, smooth, dull straw-colored, sides convex, beak bifid: achenium obovate and trigonous, sides slightly convex." — Hacienda de Castresana in Oaxaca, South Mexico, at 7,500 feet, June 1, Liebmann.

107. *CAREX MELANOSPERMA*, Liebmann, l. c. 82.

"Culm three to three and a half feet high, triquetrous: leaves two feet long, four lines wide, carinate, nerved above, margins scabrous, the sheaths thin-membranaceous, brownish, fibrillose: spikes about twenty, three or four in an axil, shortly peduncled, two inches long and flexuose, densely flowered: lower bracts very long and sheathing at the base, the sheaths in front cut and membranaceous, the upper bracts

much shorter : peduncles one to one and a half inches long, triquetrous, scabrous : staminate scales oblong, shortly mucronate, carinate, nerves fuscous, the margins pale : pistillate scales lanceolate and squarrose, reddish, furnished with a rough-ciliate mucro : perigynium about equal to the scale, ovate-elliptic, oblique, the beak recurved, slightly trigonous, nerved, smooth, straw-colored, beak slightly bifid : achenium obovate, trigonous and obtuse, black, sides convex and very slightly punctulate." — Between Huitamalco and Tiuzultán in Puebla, South Mexico, at 5,000 feet, May 1, Liebmann.

108. *CAREX VIRIDIS*, Schlecht. & Cham. in Linnæa, xi. 30.

Culm strict but slender, about two feet high : leaves crowded, rigid, rough : peduncle exserted, branched outside the sheath or sometimes simple : spikes lax, usually nodding, loosely flowered, often dark-colored, very much longer than the short bracts : perigynium one and a half to one and three fourths lines long, oblong-lanceolate, trigonous, with dorsal angle obtuse and the lateral ones acute, the faces somewhat convex, lightly many-nerved, green or variegated with dull purple, smooth, straight or slightly curved above, produced into a lightly toothed beak a half-line long, exceeding the scale : scale ovate-lanceolate, obtuse or nearly so, hyaline on the margins. — South Mexico, Schiede ; Volcan de Barba, Costa Rica, Hoffmann.

109. *CAREX TUBERCULATA*, Liebmann, l. c.

"Stoloniferous, the stolons emitting many yellow roots : culms two to three feet high, trigonous, rough on the angles above : leaves equaling the culm, three to four lines wide, revolute, nerved, bright green, rigid and carinate, rough on the margins, the sheaths thin-membranaceous, bright ferruginous, the orifice oblique : spikes numerous, exsertedly peduncled, three in an axil, two to three inches long, cylindrical and flexuose, very densely flowered : peduncles triquetrous, scabrous, two inches long or shorter above, bearing one or two or three spikes one or other of which is very short, lateral, and sessile : bracts usually exceeding the culm, serrulate on the margins and keel, base amplectant, the orifice roundish-cut, the upper ones shorter and setaceous : staminate scales oblong, mucronulate, 3-nerved, fuscous, sides somewhat hyaline : pistillate scales twice smaller, ovate-lanceolate, shortly mucronulate, yellow, 3-nerved, margins pale yellowish-red : perigynium equalling the scale, turgid, obovate, round-trigonous, short-beaked, angles conspicuous, the side dull ferruginous and tuberculate, beak paler and bifid : achenium ovate, trigonous, violet-chestnut-colored, slightly granulate." — Chinantla in Puebla, South Mexico, at 7,000 feet, May 1, Liebmann.

110. *CAREX JAMESONI*, Boott, Linn. Trans. xx. 124.

C. Galeottiana, C. A. Meyer, Bull. Acad. Brux. ix. part ii. 248.

Culm stout, three to four feet high, triquetrous, scabrous: leaves rigid, carinate, equalling the culm: bracts purple at the base, the lowest two or three feet long and short-sheathed, the upper ones becoming scale-like: peduncles three to six inches long, scabrous: spikes dark purple, lax, the uppermost subsessile and single and often crowded, the middle ones fasciculate with two or three from a sheath, the lowest compound, long-exserted, and nutant: spikelets half an inch to three inches long and one to four lines broad: perigynium lanceolate (two and a half lines or less long and nearly a half-line broad) or lance-oval, glabrous, nerved, dark purple, produced into a cylindrical bidentate and ciliate-mouthed beak, about equal to the lanceolate and mucronate purple white-margined scale. Variable.—Peak of Orizaba, South Mexico, at 12,500 feet, Galeotti, Linden. Colombia and Ecuador.

B. *Indicæ*, Tuckerman, l. c. Peduncles all branched (simple in *C. Schiedeana*), the spikelets short and surrounded at the base by a spathella or modified perigynium; perigynium small, mostly excurved.—Curious species with the aspect of grasses, very poorly represented in the New World.

111. *CAREX CLADOSTACHYA*, Wahl. Königl. Acad. Handl. xxiv. 149.

C. Mexicana, Presl, Reliq. Hænk. i. 204.

C. Hartwegii, Boott, Benth. Pl. Hartw. 96.

C. polystachya, var. *minor*, Boott, Ill. 157.

Boeckeler, in Linnæa, xl. 362, cites under *C. cladostachya* the text and figures of Boott made as *C. polystachya* (Ill. 152, tt. 490–492), but I find no reason for so doing. Boott admits that he does not know the distinctions between *C. cladostachya* and *C. polystachya*, and I am not able from either his description or figures to tell which species he had.—Culm very slender, one to two feet high, equalled by the very flaccid and rough-margined leaves: spikelets green, scattered and loosely spreading, a fourth inch or less in length: perigynium elliptic, triquetrous, small (one and three fourths lines long, one half-line broad), conspicuously nerved, smooth, produced into a very slender bidentate beak, twice longer than the ovate mucronate scale.—South Mexico: Valley of Cordova and near Orizaba, *Bourgeau*, Orizaba, *Botteri*, Mirador, *Liebmann*, Jalapa, *Schiede*, Vera Cruz, Linden; Guatemala, near city of Guatemala, *Hartweg*, Baños de los Padres, *Bernoulli*; Costa Rica, *Hoffman*; Jamaica, *Swartz*. Colombia.

112. *CAREX POLYSTACHYA*, Wahl. Königl. Acad. Handl. xxiv. 149.

C. cladostachya, Wright & Sauvalle, Fl. Cubana, 189.

Differs from *C. cladostachya* in its strict culm, much stiffer and nearly smooth leaves, more numerous spikes which are fulvous in color and more or less crowded and appressed, and in its longer beaked perigynium. — Cuba, from two stations, *Wright* 3421; “In summis montibus Jamaicae,” *Swartz*.

113. *CAREX ACROLEPIS*, Liebmann, Mex. Halv. 83.

“Culm a foot high, slender, triquetrous, smooth: leaves shorter than the culm, narrowly linear and grass-like, margins and keel scabrous, the sheaths short, fuscous, fibrillose in front: spikes androgynous, disposed in terminal and axillary long-peduncled panicles, staminate at top, shortly pedicelled, furnished at the base with a setaceous and scabrous spathella about four lines long: bracts (of the panicles) very long, overtopping the panicles, the sheaths rough in front and the orifice scariosa and cut: lower peduncles three inches long, rough, the upper shorter, bearing about three spikes: scales lanceolate and long-mucronate, nerved, the mucro rough, green on the back, dull straw-colored on the sides: perigynium longer than the scale, fusiform, trigonous, nerved and glabrous, green, the beak bifid: achenium elliptical, triquetrous, stipitate, sides plane and dark, the margins yellowish.” — *Candelaria*, Costa Rica, January, *Oersted*.

114. *CAREX OERSTEDII*, Liebmann, l. c. 84.

“Culm two to two and a half feet high, slender and flexuose, triquetrous, smooth, leafy: leaves shorter than the culm, narrowly linear, nerved, keel and margins scabrous: panicles distant, axillary and terminal, long-peduncled: bracts surpassing the culm, often eight to nine inches apart, the sheaths glabrous, membranaceous, and scariosa orifice auricled: peduncles one or two from each axil, the lowest six inches long, the upper shorter, all compressed, smooth below and scabrous above, 4-5-spiked at the top: spikes subsessile, two-ranked, androgynous with the staminate flowers above, six to eight inches long, the spathella setaceous and scabrous, shorter than the spike: staminate scales short, mucronate, imbricated: pistillate scales broadly lanceolate, spreading, long-mucronate, many-nerved, reddish-striped and straw-colored, puberulent, carinate, the mucro and keel scabrous: perigynium longer than the scale, elliptical, triquetrous, fuscous, nerved, the beak angled and sparsely ciliate, smooth below, orifice bifid: achenium stipitate, elliptical, triquetrous, sides plane and dull black, very slightly granular.” — Named for *Anders S. Oersted*,

Professor of Botany at Copenhagen, and co-worker with Liebmann on the Central American Flora. — Near Cartago, Costa Rica, January 1, Oersted.

115. *CAREX SCABRELLA*, Wahl. Königl. Acad. Handl. xxiv. 149.

Aspect of a small form of *C. cladostachya*: spikes small, often simple, never much compound, the lowest on long filiform peduncles, sometimes radical and shorter stalked: perigynium short-beaked, hairy. — Eastern Cuba, *Wright* 728; Jamaica, *Herb.*

116. *CAREX SCHIEDEANA*, Kunze, Suppl. Riedgr. 119, t. 30.

Cespitose: culm about a foot high, erect, three-angled, roughish, shorter than the convolute, slender, roughish and long-pointed leaves: spikes four or five, terminal one sometimes staminate throughout, more or less scattered, sessile or very nearly so, an inch or less long and narrow, erect: bracts conspicuous and leafy, the lowest five or six inches long, sheathless: perigynium oval or ovate-oval, round-trigonal, very lightly nerved, hispid, stipitate, the beak short, straight, and very lightly toothed; scale oblong-acuminate, acute, roughish on the nerves, usually a little longer than the perigynium. Affinity doubtful. — South Mexico, Schiede, Ehrenberg.

Section V. HYMENOCHLÆNÆ, Drejer, Symb. Car. 10. Perigynium mostly light green or whitish, thin and membranaceous in texture, mostly somewhat inflated or at least loosely investing the achenium, commonly smooth and shining and slender or oblong, tapering gradually into a distinct or long minutely toothed straight beak (or beakless or nearly so in the *Virescentes* and *C. gracillima*); pistillate spikes several or many, mostly loosely flowered and on filiform nodding or widely spreading peduncles; bracts leaf-like; staminate spike usually peduncled; stigmas three. — Mostly rather tall and slender species of uplands. The perigynium is more or less hairy in some of the *Virescentes* and in *C. venusta*, one variety of *C. debilis*, *C. Assiniboinensis*, *C. Saskatchewan*, and immature specimens of *C. cinnamomea*. The spikes in the *Virescentes*, *C. Cherokeeensis*, *C. juncea*, *C. cinnamomea*, and *C. Mendocinensis*, are usually nearly erect. I have not been able to identify *C. Saskatchewan*.

A. *Virescentes*, Kunth, Enum. Pl. ii. 429. Terminal spike pistillate at the top; pistillate spikes oblong or cylindrical, densely flowered, erect; perigynium ovate or obovate, nearly or quite beakless, often hairy.

117. *CAREX VIRESCENS*, Muhl.; Willd. Sp. Pl. iv. 251.

C. costata, Schwein. An. Tab.

C. virescens, var. *elliptica*, Olney, Exsicc. fasc. iii. no. 21.

Variable in size. Transition to the *Gracillimæ*. — New England to North Carolina and the Indian Territory, *Butler*. South America.

118. *CAREX TRICEPS*, Michx. Fl. Bor.-Am. ii. 170.

C. hirsuta, Willd. Sp. Pl. iv. 252.

C. viridula, Schwein. & Torr. Monogr. 320.

C. hirsuta, var. *pedunculata*, Schwein. & Torr. Monogr. 323.

C. complanata, Torr. & Hook. Monogr. 408.

C. Smithii, Porter; Olney, Exsicc. fasc. i. no. 28.

C. Bolliana, Boeckeler, Flora, 1878, 40.

Very variable. — New England to Florida and to Michigan (rare), and southwestward to Louisiana, *Hale*, Indian Territory, *Butler*, and Texas, *Wright*, *Hall*, *Reverchon*.

119. *CAREX ANDROGYNA*.

C. olivacea, Liebmann, Mex. Halv. 79, not Boott.

"Culm one and a half to two and a half feet high, slender and flexuose, triquetrous, glabrous: radical leaves and the lower cauline one shorter than the culm, narrowly linear, long-acuminate, carinate, rough on margin and keel: head of spikes an inch or more long: spikes three to five, appressed, cylindrical, terminal nine to ten lines long, androgynous with the base staminate, the lateral occasionally sessile and androgynous or the lower more remote and short-peduncled, pistillate, some of the upper ones sometimes staminate at base: bracts leafy, carinate, shorter than the culm, the margins and keel scabrous: staminate scales oblong, obtuse, three-nerved on the back, margins scarious; pistillate scales shorter than the perigynium, ovate-lanceolate, acuminate, carinate, concave, three-nerved on the back, the mid-nerve olive-colored and rough above, margins hyaline: perigynium stipitate, somewhat compressed, elliptical-triquetrous, glabrous, olive-colored, lateral nerves plane and the dorsal convex, beak emarginate: achenium broadly elliptic, sides plane, very slightly punctulate, a third shorter than the perigynium." — Peak of Orizaba, South Mexico, at 10,000 feet, Sept. 1, Liebmann.

120. *CAREX ANISOSTACHYS*, Liebmann, l. c. 78.

Culm six inches high, slender, triquetrous, rough on the angles: leaves usually shorter than the culm (equalling the culm in small specimens), narrowly linear, long-acuminate, carinate, the keel and margins ciliate, sheaths compressed, cinnamon-color: spikes three to four, sessile, appressed, cylindrical, terminal eight lines long, androgynous with the base staminate, the others five lines long, alternate and approximate or the lowest rather remote: bracts leafy-setaceous,

rough, shorter than the culm: staminate scales oblong-lanceolate, denticulate above, mid-nerve green, margins hyaline, reddish-punctate; pistillate scales usually shorter than the perigynium, lanceolate, acuminate, the beak and the margins slightly ciliate: perigynium elliptical, trigonous, the beak and nearly entire orifice ciliate, sides concave, nerved, yellowish green: achenium obovate, triquetrous, apiculate, yellowish, smooth, sides concave." — Puebla, South Mexico, at 7,000 feet, May 1, Liebmann.

121. *CAREX CHLOROCARPA*, Liebmann, l. c. 77.

C. Liebmanni, Walpers, Ann. iii. 705.

"Culm six to eight inches high, slender, triquetrous, rough on the angles: leaves shorter than the culm, narrowly linear, carinate, nerved, rough on margins and keel, sheaths scabrous, ferruginous above, with the orifice truncate: spikes three or four, cylindrical, the terminal androgynous with the base staminate, the remainder alternate, shortly peduncled, appressed, approximate or the lowest often remote, all furnished with leafy-setaceous scabrous bracts which are shorter than the culm: staminate scales oblong, hyaline on the margins, the midnerve green; pistillate scales similar to the staminate, shorter than the perigynium: perigynium stipitate, elliptical, trigonous, six-angled, green, glabrous, the beak bifid: achenium obovate, trigonous, apiculate, glabrous, yellowish, a little concave on the sides, a third shorter than the perigynium." — Parada, Sierra de Oaxaca, South Mexico, at 8,000 to 8,500 feet, June 1, Liebmann.

B. *Sylvaticæ*, Tuckerman, Enum. Meth. 12. Terminal spike all staminate; pistillate spikes mostly long-exserted; perigynium few-nerved, contracted into a cylindrical beak which is longer than the body.

122. *CAREX LONGIROSTRIS*, Torrey, Schwein. An. Tab.

C. Sprengelii, Dewey, Spreng. Syst. Veg. iii. 827.

C. longirostris, var. *minor*, Boott, Phila. Acad. Sc. 1863, 78.

C. longirostris, var. *microcystis*, Boeckeler, Linnæa, xli. 241.

Variable in the size and shape of the spikes, which are sometimes almost globular and at others as slender as in *C. debilis*. — Shady banks from New England to Pennsylvania, *Garber*, and to Michigan, Illinois, *Mead*, and Nebraska, *Bruhin* (St. Helena); Rocky Mts. of Colorado, *Hall & Harbours* 614; Rocky Mts. of British America, *Drummond*; Saskatchewan and Winnipeg, *Bourgeau*, and Grand Valley, *Macoun*.*

* *CAREX MICHELII*, Host, var. *ULTRA* (*C. bispicata*, Hook. & Arn. Bot. Beechey's Voy. 118, t. 28; *C. longirostrata*, C. A. Meyer, Cyp. Nov. t. 12; *C. Camtschatcensis*, Kunth, Enum. Pl. ii. 477) may be expected in Alaska. It

123. *CAREX ASSINIBOINENSIS*, W. Boott, Bot. Gaz. ix. 91.

Very slender, two feet high: leaves narrow (a line broad), shorter than the stem: staminate spike one, slender, with nearly linear scales: pistillate spikes, or at least the lower ones, on thread-like long peduncles, an inch or less long and very loosely flowered (flowers often a half-inch apart): perigynium few-ribbed towards the base, hairy, gradually contracted into a very slender beak: scale white, awl-shaped, about as long as the perigynium. — British America: Assiniboine Rapids, Lake Manitoba, and Grand Valley, *Macoun*.

C. Flexilis, Tuckerman, Enum. Meth. 13. Terminal spike all staminate except in *C. Krausei*; pistillate spikes rather thick (very small in *C. capillaris* and *C. Krausei*), more or less drooping; perigynium beaked, few-nerved or nerveless, tawny or whitish.

124. *CAREX CHEROKEENSIS*, Schweinitz, An. Tab.

C. recurva, Muhl. Descr. Gram. 262.

C. Christyana, Boott, Journ. Bost. Nat. Hist. Soc. v. 5.

C. Brazasana, Steud. Cyper. Plant. 236.

Peculiar in bearing two or three spikes from one sheath. Transition to the Polystachyæ. — "Banks of the Apalachicola River, Florida, to the mountains of Georgia and westward," Chapman. Georgia to Louisiana and Texas. Said by Dr. Boott to have been collected at Santa Rosa Creek, Calif., by Dr. Thurber. Immature specimens collected in California by Bigelow have been referred here.

125. *CAREX FLEXILIS*, Rudge, Linn. Trans. vii. 98, t. 10.

C. blepharophora, Gray, Ann. N. Y. Lyc. iii. 237.

This species was founded upon Newfoundland specimens. — Newfoundland to Central and Northern New York, Salisbury, Conn., *Herb.*, to Lake Superior and N. Minnesota. Rare.

126. *CAREX CAPILLARIS*, Linn. Sp. Pl. 977.

C. capillaris, var. *elongata*, Olney, Prel. Cat. Wheeler's Pl. 53.

Greenland, *Vahl*, Newfoundland, *La Pylaie*, New Brunswick, *Herb.*, White Mts., Point de Tour, Lake Huron, *W. Boott*, Saskatchewan, *Bourgeau*, and on the mountains of Colorado, Utah, Wyoming, and Montana. Europe.

127. *CAREX KRAUSEI*, Boeckeler, Engler's Bot. Jahrb. vii. 279.

"Plant bright green, cespitose, the roots capillary: culm five to

was found by Wright and others near our borders in Kamtschatka. The pistillate spikes are one or two, and 1-6-flowered: perigynium round-obovate below, very abruptly contracted into a cylindrical and slender deeply cut beak as long as the body: leaves flat: a foot high. It has the aspect of *C. Geyeri*.

eight inches high, erect, setaceous, scarcely angled, striate, smooth, few-leaved towards the base: leaves somewhat remote, spreading, much shorter than the mature culm, somewhat pubescent, acuminate, plane, the margins towards the apex minutely dentate, half to two thirds of a line wide and two to three and a half inches long: spikes four or five, pale, long-peduncled, very remote, narrowly cylindrical, nearly equal in length, three and a half to four and a half lines long, scarcely a line broad above, the terminal one androgynous, the others pistillate and pendulous: peduncles very slender, somewhat scabrous: bracts ochreiform: scales hyaline-membranaceous, ochroleucous, ovate-orbicular, obtuse, the midnerve bright green: perigynium minute, straight, pellucid-membranaceous, olive-colored, about as long as the scale (one and a third to one and a half lines long), very shortly stipitate, oblong-trigonus, attenuated above, nerveless, smooth, very slightly striate, the orifice entire." — Alaska, Krause.

- D. *Debiles*, Carey, Gray's Man. 1848, 558. Terminal spike all staminate (occasionally pistillate above in *C. venusta*); pistillate spikes very narrow and slender, long-exserted and nodding, mostly very loosely flowered; perigynium rather small, not turgid. The types of the group are *C. debilis* and *C. arctata*.

128. *CAREX JUNCEA*, Willd. Enum. Pl. Hort. Berol. 63.

C. miser, Buckley, Sill. Journ. xlv. 173.

Transition to the *Ferrugineæ*. — Roan Mt. and Black Mt. Range, N. Carolina, *Herb.* "Mountains of N. Carolina and Georgia," Boott.

129. *CAREX ARCTATA*, Boott, Hook. Fl. Bor.-Am. ii. 227.

C. sylvatica, Dewey, Sill. Journ. x. 40.

Distinguished from all forms of *C. debilis* by its short-ovate very short-beaked perigynium which is abruptly contracted at the base and stipitate, and by its pointed or short-awned scales which are nearly as long as the perigynium. The radical leaves are usually short and broad. — Meadows and copses, New England to Pennsylvania and Ontario and Michigan, and northwestward to N. Minnesota and Dakota "along the Missouri at Fort Pierre," Dewey.

C. ARCTATA × *FORMOSA*? (*C. Knieskernii*, Dewey, Sill. Journ. 2d ser. ii. 247). New York at Oriskany, *Knieskern*, Rome, *Vasey*; Woods near Kakabeka, Lake Superior, *Macoun*. Sterile.

130. *CAREX DEBILIS*, Michx. Fl. Bor.-Am. ii. 172.

C. tenuis, Rudge, Linn. Trans. vii. 97, t. 9.

C. flexuosa, Muhl.; Willd. Sp. Pl. iv. 297; Schkuhr, Riedgr. Nachtr. 74, f. 124.

C. debilis, var. *β*, Boott, Ill. 92.

Variable. The perigynium is sometimes short (the var. β of Boott) and much like that of *C. arctata* (which see).—Moist meadows and copses, Norway House, British America, Richardson, to Nova Scotia, Macoun, and southward through New York and New England to the mountains of N. Carolina and Georgia.

Var. PUBERA, Gray, Man. 5th ed. 593.

C. venusta, var. β , Boott, Ill. 51.

Perigynium elongated, much attenuated at both ends, hairy. (See *C. venusta*.)—Bear Meadows, Centre Co., Pennsylvania, Porter, and N. Carolina, Curtis, according to Boott. Imperfectly known. It suggests *C. Assiniboinensis*.

Var. PROLIXA.

C. debilis, var. γ , Boott, Ill. 92.

Leaves often very long and loose: spikes thicker and more densely flowered: perigynium more inflated, much elongated (four to five lines long), with a very slender beak.—Florida, Chapman, to Louisiana, Drummond, Hale, Langlois.

C. DEBILIS \times *VIRESCENS*? Revere, Mass., *C. E. Faxon*.

131. *CAREX VENUSTA*, Dewey, Sill. Journ. xxvi. 107, f. 62.

Distinguished at once from all forms of *C. debilis* by the dulness and thicker texture of the perigynium which is scarcely beaked but rather narrowed gradually into a point, and the many-nerved or ribbed character of the perigynium.—“Low banks of streams, Florida to N. Carolina,” Chapman.

Var. GLABRA.

C. glabra, Boott. Ill. 93.

C. venusta, var. γ , Boott, Ill. 51.

I can distinguish no permanent character to separate this from *C. venusta* other than the smoothness of the perigynium. The terminal spike is occasionally pistillate at the top in both this and the species.—Oneida Co., N. York, Knieskern; near Philadelphia, Smith; Cape May Co. and Camden Co., N. Jersey, “in sphagnous swamps, growing with *C. subulata*, *C. folliculata*, and *Juncus asper*,” Parker; Mobile, Alabama, Sullivan. Evidently rare.

132. *CAREX CINNAMOMEA*, Olney, Proc. Am. Acad. vii. 396.

Culm slender, eighteen inches to two feet high, smooth, exceeding the narrow rough-margined leaves (which are barely more than a line wide): bracts leafy, bearing short sheaths: spikes an inch or inch and a half long, the lower long-peduncled, the upper sessile or nearly so, all erect, cinnamon-colored, compactly flowered or the lowest

loosely flowered at the base: perigynium elliptic-ovate, hairy when young, abruptly contracted into a short minutely toothed beak, lightly nerved, longer and broader than the very obtuse and erose-margined scale. — California in the Red Mountains, Mendocino Co., *Bolander* 6477; "Upland marshes and springs," near Kerbyville, Oregon, *Howell*.

133. *CAREX MENDOCINENSIS*, Olney; W. Boott, Bot. Calif. ii. 249.

Much like the last: leaves broader (two lines or more) and longer: spikes longer and very slender, alternately flowered at the base: scale acute or muticous. Not sufficiently known. — In swamps near Mendocino City, Calif., *Bolander* 4701; *Kellogg & Harford* 1082.

134. *CAREX SASKATCHEWANA*, Boeckeler, Linnæa, xli. 159.

Perhaps a member of this group: — "Rhizome elongated, slender, the fibrils long and capillary: culms several, fasciculate, strict, setaceous-capillary, triangular, rough above, one and a half to two inches high: leaves yellowish green, spreading, firm, linear, shortly attenuate, rather obtuse, plane and striate, a line wide, roughish towards the apex on the margins, the upper ones and the bracts filiform and much longer than the culm (two inches long): spikes three or four, erect, peduncled, very slender, terete, somewhat densely flowered, yellowish white, before flowering approximate: staminate spike linear-oblong, few-flowered, three to four lines long: pistillate spikes filiform, 8 to 12-flowered, five to six lines long: peduncles capillary, exserted: scales pellucid-membranaceous, white above and dull yellow towards the base, the middle pale green, broadly ovate, obtuse or slightly acute: perigynium (young) equalling the scale, oblong-linear, straight, slightly attenuated, triangular, nerveless, very lightly striolate, the margins lightly ciliate, whitish above and yellowish-green at the base, the orifice obtuse and entire. — Saskatchewan, Douglas."

E. Gracillimæ, Carey, Gray's Man. 1848, 552. Terminal spike usually pistillate at the top; pistillate spikes habitually thicker than in the *Debiles*; perigynium ovate-oblong, more or less turgid.

135. *CAREX ÆSTIVALIS*, M. A. Curtis, Sill. Journ. xlii. 28.

C. Rugeliana, Kunze, Suppl. Riedgr. 189, t. 48.

C. virescens, var. *æstivalis*, Olney, Exsicc. fasc. iii. no. 22.

In the mountains from Saddle Mt., W. Massachusetts to N. Carolina. Evidently local.

136. *CAREX GRACILLIMA*, Schweinitz, An. Tab.

C. digitalis, Schwein. & Torr. Monogr. 324, t. 27.

Wet meadows and woodlands from Norway House, Richardson, and Saskatchewan, *Bourgeau*, to New England and N. Carolina.

C. GRACILLIMA × *PUBESCENS* (*C. Sullivantii*, Boott, Sill. Journ. xlii. 29). Columbus, Ohio, *Sullivant*; Yonkers, N. York, *Howe*; Stanton, Delaware, *Commons*. An exact medium between the two species, and growing with them wherever found. Sterile.

137. *CAREX OXYLEPIS*, Torrey & Hooker, Monogr. 409.

Much the aspect of *C. venusta*. — “Low ground, Florida and westward,” Chapman. Santee Canal, S. Carolina, *Ravenel*; Chatahoochee, W. Florida, *Curtiss*; Alabama, *Buckley*; Louisiana, *Hale*, *Carey*; Texas, *Wright*, *Hall*.

138. *CAREX FORMOSA*, Dewey, Sill. Journ. viii. 98.

Central and Western N. York; Michigan; Belleville, Ontario, *Macoun*. Evidently local. This species is credited to Massachusetts in Gray’s Manual. The only authority I know for its occurrence there is a plant collected at Stockbridge by Prof. Dewey. I have seen in Herb. Olney such a plant from Prof. Dewey, but it is *C. gracillima*.

139. *CAREX DAVISII*, Schweinitz & Torrey, Monogr. 326.

C. aristata, Dewey, Sill. Journ. vii. 277.

C. Torreyana, Dewey, l. c. x. 47.

Named for Prof. E. Davis of Westfield, Mass. — Wet meadows, Massachusetts to Minnesota and Indian Territory, *Butler*, and south to the mountains of Georgia, Chapman.

F. Grisea. Terminal spike staminate; perigynium more or less turgid, often glaucous, scarcely beaked, finely striate; spikes erect.

140. *CAREX GRISEA*, Wahl. Königl. Acad. Handl. xxiv. 154.

C. laxiflora, Schkuhr, Riedgr. Nachtr. 69, f. 141.

C. grisea, var. *minor*, Olney, Hall’s Pl. Tex. 25.

Throughout the Northern United States east of the Mississippi; also Texas, *Berlandier*, *Wright*, *Hall*; S. Utah, probably, *Palmer*, an immature specimen. Florida?

Var. *ANGUSTIFOLIA*, Boott, Ill. 35.

C. laxiflora, Ell. Sk. Bot. ii. 549.

“*C. cryptandra*, Schwein. in Herb. Ell.,” Olney in Hall’s Pl. Tex. 25.

The prevailing Southern form of the species: very slender, the leaves long and narrow: staminate spike peduncled; pistillate spikes looser flowered: perigynium more tawny, scarcely tumid, three-angled and more or less pointed. It sometimes counterfeits *C. oligocarpa* (which see). — Sellersville, Penn., *C. D. Fretz*; Florida,

Chapman; W. Louisiana, *Hale*, the perigynia not typical; E. Texas, *Hall*.

141. CAREX GLAUCODEA, Tuckerman; Olney, Proc. Am. Acad. vii. 395.

C. grisea, var. *mutica*, Carey, Gray's Man. 1848, 522.

C. flaccosperma, Gray's Man. 5th ed. 587; Boott, Ill. t. 88; not Dewey.

Very glaucous throughout: culm lax, six to eighteen inches high: leaves flat, two to four lines wide: spikes nearly the same as in *C. granularis*: perigynium ovoid-oblong (one and a half to two lines long), mostly obtuse, mostly longer than the white awn-pointed scale. — Distinguished at once from *C. granularis* and *C. grisea* by its glaucousness. In aspect it is little like *C. grisea*. Its nearest ally is *C. flaccosperma*, from which it is readily distinguished by its shorter perigynium, awned scale, and narrower leaves. — Summit of Mt. Holyoke and Mt. Tom, on trap rocks, *Tuckerman*; Wethersfield, Conn., *Wright*; New Jersey, Austin, *Knieskern*, at Haddenfield, *Diffenbaugh*; Pennsylvania, at Easton and Bethlehem, *Porter*, woods near Philadelphia, *Smith*, Lancaster Co., *Fiot*; Delaware, at Wilmington, *Canby*, and Centreville, *Commons*; New Albany, Indiana, *Dr. Clapp*.

142. CAREX FLACCOSPERMA, Dewey, Sill. Journ. 2d ser. ii. 245.

C. laxiflora, var. (?) *mutica*, Torr. Monogr. 414.

C. xanthosperma, Dewey, Sill. Journ. 2d ser. xlii. 10 (Index Car.).

Somewhat glaucous: leaves very broad and flat (often a half-inch wide): perigynium two lines or more long, cylindrical, rust-colored below, somewhat pointed, thrice longer than the obtuse or muticous scale. — Florida, Dewey; Red River, Louisiana, *Hale*; Texas, *Hall*, *Wright*.

143. CAREX PILOSIUSCULA, Boeckeler, Flora, 1882, 61.

"Cespitose: culm about a foot high, erect, slender but firm, obtusely angled, smooth, leafy below: leaves remote, somewhat pilose, long, narrowly acuminate (one to two lines wide), smooth on the margins, the upper often longer than the culm: spikes more or less crowded at the top of the culm, the lowest somewhat remote, strictly erect: staminate spike yellow, sessile, many-flowered, oblong-linear and acute (seven to nine lines long, one to one and a half lines wide): pistillate spikes three or four, olive-colored, cylindrical or oblong, densely many-flowered (six to ten lines long and two and a half lines

wide), the lowest short-peduncled, the others nearly sessile: bracts possessing short sheaths, the two lowest leafy, the upper scarcely surpassing the staminate spike: scales large and somewhat rigid, the staminate broadly ovate, obtuse, mucous or minutely mucronate, yellowish green, the pistillate oval or obovate with the back three-nerved and strongly cuspidate: perigynium (not perfectly mature) exceeding the scale, evidently stipitate, lance-oblong, very slightly beaked, compressed-triangular, many-striate, grayish green, the orifice slightly emarginate (whole perigynium two lines long). — Salt plains of the Rocky Mountains, Dönitz.”

Section VI. SPIROSTACHYÆ, Drejer, Symb. Car. 10. Perigynium smooth or minutely granulated or rarely somewhat serrate on the margins, prominently nerved, mostly yellowish, squarrose, mostly beaked, the orifice entire: staminate spike mostly single; pistillate spikes two to five, short (usually an inch or less long), yellow or fuscous, compactly flowered: stigmas three. — Medium-sized species, growing in meadows and grassy swales. *C. pallescens* has an entirely beakless perigynium.

A. *Granulares*. Spikes scattered, cylindrical, the lowest long-stalked; bracts erect, long and leafy; sheaths short or nearly obsolete.

144. *CAREX LONGICAULIS*, Boeckeler, Flora, 1882, 62.

“Plant tall, bright green: rhizome elongated, horizontal, hard and thick, nodose and branched, about the size of a goose-quill, fibrils numerous and rigid: culm two to four feet high, slender, scarcely a line in diameter at the middle, strictly erect, acutely angled, smooth, many-leaved toward the base: sheaths herbaceous, nearly laminiferous: leaves somewhat remote, stiffly herbaceous, long (one to two feet long and one and a half to three inches wide), narrowly acuminate, towards the apex somewhat toothed, the upper not rarely surpassing the culm: spikes four or five, more or less contiguous or the lower one a little remote, the staminate small, sessile (three to eight lines long), somewhat clavate and in color grayish yellow, the pistillate grayish green, short-peduncled, densely flowered, the lowest nearly cylindrical (eight to ten lines long), the upper ones often very short, oblong: bracts leafy-setaceous from yellowish and puberulent sheaths, the lowest scarcely reaching the staminate spike: staminate scales long-oblong, obtusish, slightly mucronate, the margin pale-hyaline: pistillate scales broadly oval or lance-oval, pale, the keel bright green, three-nerved, shortly mucronate: perigynium green, equalling or slightly surpassing the scale (one and three fifths lines long), broadly ellipsoid,

triangular, turgid, sides all alike and plane, slightly many-nerved and punctate, short-beaked, the beak hirtellate with a slightly emarginate orifice: achenium obovate, equalling the perigynium, densely punctulate, the angles prominent. — Valley of Mexico, no. 513, Schaffner."

145. *CAREX GRANULARIS*, Muhl. ; Willd. Sp. Pl. iv. 279.

C. chlalaros, Steud. Cyper. Plant. 231.

C. Haleana, Olney, Exsicc. fasc. iii. no. 14.

In grassy places throughout the States east of the Mississippi; Saskatchewan, *Bourgeau*, *Macoun*.

146. *CAREX MICRODONTA*, Torrey & Hooker, Monogr. 423.

C. alveata, Boott, Journ. Bost. Nat. Hist. Soc. v. 7.

C. Ræmeriana, Scheele, Linnæa, xxii. 346.

C. Wrightii, Dewey, Bot. Mex. Bound. 232.

Distinguished from *C. Crawei* by its greater height and looser habit, its sheathing leaves, more numerous staminate spikes, more slender pistillate spikes which are more or less long-peduncled, and a stronger nerved perigynium. Culm usually a foot or eighteen inches high, rather slender. Leaves often involute when dry. The pistillate spikes are often staminate at the top, and to this form I have no hesitation in referring Scheele's *C. Ræmeriana*. Transition to the *Anomalæ*. — Texas, *Drummond*, *Wright*, *Hall* ("wet prairies, Houston"), *Lindheimer* ("in patches on low ground"); Louisiana and Arkansas according to Boott.

Var. *LATIFOLIA*.

Leaves short (three to four inches long) and broad and flat (three lines broad), many nerved, long-acuminate, the sheaths loose and conspicuous. — Texas, *Buckley*, "wet prairies at Dallas," *Reverchon*.

Var. *CONTROVERSA*.

C. extensa, Boott, Ill. 207, as to Gregg's specimens.

Culm two to four inches high, exceeded by the narrow leaves: perigynium broader and shorter beaked than in the species. — Marshy ground near San Pablo, Mexico, *Gregg*.

147. *CAREX CRAWEI*, Dewey, Sill. Journ. 2d ser. ii. 246.

C. heterostachya, Torr. Sill. Journ. 2d ser. ii. 248.

C. Crawei, var. *heterostachya*, Dewey, Sill. Journ. 2d ser. xlii. 4 (Index Car.).

Perhaps too near the last. — From Montreal, *Macrae*, to New York and Michigan, and thence northwestward to Winnipeg Valley, *Bourgeau*.

B. *Extensæ*, Fries, Corp. 188. (Tuckerman, Enum. Meth. 13. *Flavæ*, Tuckerman, l. c.) Spikes mostly approximated or aggregated at the top of the culm (becoming remote in *C. extensa*), the lowest one or two subtended by a long and leafy mostly abruptly spreading and nearly or entirely sheathless bract.

148. *Carex extensa*, Goodenough, Linn. Trans. ii. 175.

Coast of Long Island and Coney Island, New York, *Herb.*; Norfolk, Virginia, *McMinn*. Introduced from Europe.

149. CAREX FLAVA, Linn. Sp. Pl. 975.

C. lepidocarpa, Tausch. Flora, 1834, 179.

Forms *lepidocarpa* and *androgyna*, Olney, Exsicc. fasc. iii. nos. 26 and 27.

Newfoundland, *La Pylaie*, etc., to New England and Ohio, and northward to Carlton House, British America; Hudson's Bay Creek, Montana, *Canby*. Europe.

150. CAREX CÆDERI, Retz in Ehrh. Calam. Exsicc. no. 79.

C. flava, var. *Cæderi*, Willd. Act. Berol. 1794, 44, t. 1.

C. viridula, Michx. Fl. Bor.-Am. ii. 170.

C. flava, var. *lutescens*, Wahl. Fl. Lapp. 234.

Bears the name of Georg Christian Cæder, 1728–91, a Danish botanist. — Newfoundland, *La Pylaie*, to Pennsylvania and Illinois, and northward to the Great Plains, *Macoun*, and Rocky Mts., *Drummond*, of British America; S. Utah, *Parry*. Europe.

151. CAREX URBANI, Boeckeler, Engler's Bot. Jahrb. vii. 280.

“Bright green: culm (not fully mature) three to four inches high, smooth, many-leaved at the base: leaves rigid, herbaceous, crowded, subrecurved and spreading, an inch and a half to four inches long, short-acuminate, many-nerved, the margins slightly dentate, one line broad: sheaths membranaceous, whitish, truncate: spikes four, more or less approximate, greenish white, the staminate oblong-linear (seven lines long and a line and a half broad), with the bract scale-like and cuspidate and the keel ciliate, the pistillate (not mature) peduncled, oblong-oval, obtuse, densely flowered (five to six lines long, three lines broad): bracts all elongated and sheathing (two to four inches long): scales large, membranaceous, ovate- or oblong-sublanceolate, obtuse, muticous, three-nerved and green on the broad back, setulose or glabrous, the sides white-hyaline and very slightly reticulated: perigynium (immature) bright green, about the length of the scale, scarcely erect, slightly incurved, turgid, oblong-oval, contracted at the base, costate-nervose, gradually produced into a rather long subglabrous toothed beak.” — Alaska, Krause.

C. Fulvellæ, Fries, Summa, 70. Spikes scattered, short and thick, oblong (usually a half-inch or less long), the lowest more or less peduncled; bracts conspicuously sheathing, usually not very leafy.

152. *CAREX LEMMONI*, W. Boott, Bot. Gaz. ix. 93.

C. fulva, Gooden., var. *Hornschuchiana*, W. Boott, Bot. Calif. ii. 250.

Cespitose: culm slender but erect, one to two feet high, smooth, longer than the flat and thin yellowish green rather abruptly pointed leaves: spikes two to five, the terminal staminate and an inch or less long, the others a half-inch long and mostly staminate at the top, with peduncles included, the upper one usually sessile at the base of the staminate spike: lower bracts twice longer than the spikes: perigynium small (one and three fourths lines long and three fourths line or less broad), lance-oblong, triangular below, smooth, thin, produced into a slender minutely toothed often rough-margined beak, about equalling or surpassing the straw-colored obtuse thin-margined scale. — California, Sierra Nevada, *J. G. Lemmon*, Inspiration Rocks, Yosemite, *Bolander* 4905, Mariposa Grove, *Bolander* 4995. *C. spissa* and perhaps *C. ultra* were once distributed as *C. Lemmoni*.

153. *CAREX FULVA*, Goodenough, Linn. Trans. ii. 177.

C. Greeniana, Dewey, Sill. Journ. xxx. 61.

Goodenough received the original specimens from "America and Newfoundland." *B. D. Greene* found it previous to 1836 by a pond at Tewksbury, Mass., where it was probably introduced. It has not been found since. It may be native in Newfoundland. Europe.

C. lævigata, Smith, was also found at Tewksbury by *B. D. Greene*, but it has not been found again. Europe.

D. Pallescentes, Fries, Summa, 71. Spikes globular or short-oblong, obtuse, sessile or short-peduncled, approximate at the top of the culm; bracts short, leaf-like, sheathless; perigynium entire at the orifice, the beak none or very short and stout.

154. *CAREX PALLESCENS*, Linn. Sp. Pl. 977.

C. undulata, Kunze, Suppl. Riedgr. 23.

C. pallescens, var. *undulata*, Carey, Gray's Man. 1848, 552.

Meadows, New England to Pennsylvania and Lake Superior. Europe.

155. *CAREX TORREYI*, Tuckerman, Enum. Meth. 21.

C. abbreviata, Boott, Linn. Trans. xx. 141.

New York, *Torrey*; Bethlehem, Penn., Schweinitz; Clear Creek Cañon, near Golden City, Colorado, *E. L. Greene*; Grand Valley,

Great Plains, British America, *Macoun*; Carlton House, S. W. of Hudson's Bay, *Richardson*. Very rare. Professor Tuckerman founded the species upon specimens in the herbarium of Sir W. J. Hooker, which were mixed with *C. pallescens* from New York (sent by Dr. Torrey) and Carlton House. The same year Dr. Boott found a plant in Herb. Prescott (*Fielding*) in England with the MS. name *C. abbreviata*, and he published it, supposing that it came from the Altai. In 1849 Professor Tuckerman found the same in Kunze's herbarium, at Leipsic, labelled "*C. abbreviata*, Schweinitz, no. 55," from Bethlehem, Penn. Prescott had evidently received his specimen from Kunze. Schweinitz preserved no specimen in his own herbarium.

Section VII. DACTYLOSTACHYÆ, Drejer, Symb. Car. 10. (*Brachyrhynchæ*, Bailey, Coulter's Man. 328.) Perigynium mostly short and trigonous, with a short and straight or curved beak, green or greenish, scarcely inflated; scales of the pistillate spikes mostly whitish, often small; staminate spike mostly one; pistillate spikes short (seldom exceeding an inch), commonly rather loosely flowered and slender; bracts sheathing, the sheaths often conspicuous and colored. — Undersized and lax or slender species inhabiting meadows and copses. In a few of the less evolved species the perigynium is hairy. In some of the *Laxifloræ* and some other species the sheaths are not conspicuous.

A. *Oligocarpæ*, Carey, Gray's Man. 1848, 554. Slender and narrow-leaved species with leafy bracts and inconspicuous green sheaths; perigynium rounded on the angles, finely many-striate, often somewhat punctulate as in *C. grisea*, to which the group forms a transition.

156. *CAREX CONOIDEA*, Schkuhr, Riedgr. Nachtr. 67, f. 168.

C. granularioides, Schwein. An. Tab.

C. tetanica, Schwein. & Torr. Monogr. 347.

C. Illinoensis, Dewey, Sill. Journ. 2d ser. vi. 245.

Staminate spike rarely sessile. — Grassy places, Mass. to mountains of North Carolina and westward to Ohio and Illinois.

157. *CAREX OLIGOCARPA*, Schkuhr, Riedgr. Nachtr. 58, f. 170.

C. subuniflora, Steud. Cyper. Plant, 234.

C. oligocarpa, var. *Sartwelliana*, Dewey, Sill. Journ. 2d ser. v. 176.

Distinguished from *C. grisea*, var. *angustifolia*, with which it is sometimes confounded, by its smaller perigynium, which is abruptly contracted at its middle into a conspicuous beak. I find that, in general, botanists have not a clear conception of this species. — Dry

woods and copses, Canada and W. New England to Pennsylvania, Kentucky, and Illinois.

158. *CAREX HITCHCOCKIANA*, Dewey, Sill. Journ. x. 274.

Dedicated to the geologist, Edward Hitchcock, and lady, who aided Professor Dewey in securing plates to illustrate his writings in Silliman's Journal. — Same distribution as the last.

B. *Laxifloræ*, Kunth, Enum. Pl. ii. 452. (*Careyanæ*, Tuckerman, Enum. Meth. 15. *Plantagineæ* and *Digitales*, Carey, Gray's Man. 1848, 554.) Slender more or less broad-leaved species with mostly leafy bracts, green sheaths, and loosely flowered spikes; perigynium mostly conspicuously three-angled, with a more or less curved beak. — In *C. Caroliniana* and *C. plantaginea* the sheaths are leafless and more or less colored.

159. *CAREX LAXIFLORA*, Lamarck, Dict. de Bot. iii. 392.

C. striatula, Michx. Fl. Bor.-Am. ii. 173.

C. anceps, Schwein. & Torr. Monogr. 343, in part.

C. ignota, Dewey, Sill. Journ. 2d ser. vi. 348.

The following key to *C. laxiflora* and its varieties, modified from Dr. Boott, is convenient: —

I. Perigynium elliptic, attenuated at the apex, not prominently nerved; beak not strongly curved.

1. Leaves narrow.

a. Spikes narrow, loosely flowered, cylindrical . . . *C. laxiflora*.

b. Spikes broad, densely flowered, oblong . . . Var. *styloflexa*.

2. Leaves usually broad and flat. Spikes narrow and loosely flowered.

Var. *patulifolia*.

II. Perigynium obovate, abruptly beaked, mostly conspicuously striate; beak short, usually strongly recurved.

1. Leaves narrow.

a. Spikes narrow, mostly cylindrical and loosely flowered; plants slender . . . Var. *intermedia*.

b. Spikes thick, oblong, densely flowered; plants stouter, the bracts very broad and leafy . . . Var. *striatula*.

2. Leaves very broad. — Spikes narrow and loosely flowered. Var. *latifolia*.

Typical *C. laxiflora* is further distinguished by a long-peduncled staminate spike, pistillate spikes an inch or more long and more or less scattered: leaves three lines or less broad. Evidently not common, at least northward. — Connecticut and Michigan (?) to Florida and Texas.

Var. *STYLOFLEXA*, Boott, Ill. 37.

C. styloflexa, Buckley, Sill. Journ. xlv. 174.

C. fusiformis, Chapm.; Dewey in Sill. Journ. 2d ser. vi. 244.

C. protracta, Steud. Cyper. Plant. 234.

A slender plant with narrower leaves than the type and mostly compact spikes a half-inch long, the lower on filiform peduncles: perigynium slender, mostly triangular-fusiform, the apex curved. — Lancaster Co., Penn., *Porter*, to Florida and Texas.

Var. *PATULIFOLIA*, Carey, Gray's Man. 2d ed. 524.

C. plantaginea, Schkuhr, Riedgr. Nachtr. 65, f. 195 (excl. f. 70).

C. anceps, var. *patulifolia*, Dewey, Wood's Bot. 1845, 423.

C. laxiflora, var. *plantaginea*, Boott, Ill. 37.

Radical leaves five to eight lines broad: spikes usually longer and more loosely flowered than in the type: perigynium sometimes straight. — New England to Pennsylvania and westward; Alabama, *Beaumont*.

Var. *INTERMEDIA*, Boott, Ill. 37.

C. heterosperma, Wahl. Königl. Acad. Handl. xxiv. 151.

C. anceps, Muhl.; Willd. Sp. Pl. iv. 278; Schkuhr, Riedgr. Nachtr. 66, f. 128.

C. anceps, var. *angustifolia*, Dewey, Wood's Bot. 1845, 423.

C. laxiflora, var. *blanda gracillima*, Boott, Ill. 38.

Canada to Florida.

Var. *STRIATULA*, Carey, Gray's Man. 2d ed. 524.

C. conoidea, Muhl. Descr. Gram. 248.

C. blanda, Dewey, Sill. Journ. x. 45.

C. anceps, var. *striatula*, Carey, Gray's Man. 1848, 554.

Var. *blanda*, and sub-vars. *major* and *minor*, Boott, Ill. 37.

Leaves two to six lines broad. — Throughout the Northern States east of the Mississippi and probably common southward; also in Newfoundland, *La Pylaie*, N. W. Iowa, *Cratty*, Texas, *Wright*. Evidently our commonest form.

Var. *LATIFOLIA*, Boott, Ill. 38.

Acton, E. Massachusetts, *W. Deane*, to Pennsylvania and Michigan.

160. *CAREX HENDERSONI*.

C. laxiflora, var. *plantaginea*, Olney, Proc. Amer. Acad. 1872, 407; W. Boott, Bot. Calif. ii. 245.

Distinguished at once from *C. laxiflora*, var. *patulifolia*, by its large perigynium (two and a half to two and three fourths lines long) which is more strongly nerved and more gradually contracted at the ends, its proportionally shorter, blunter, and firmer pistillate scales, and its more closely flowered, approximate, shorter-peduncled spikes. — Lower Frazer River, lat. 49°, *Dr. Lyall*; Oregon, *Hall* 602, bogs at Portland, *L. F. Henderson*, Multnomah Co., *Howell*, and probably

Nuttall's specimens cited by Boott (Ill. 36); Mendocino Co., Calif. Bolander 4747.

161. *CAREX RETROCURVA*, Dewey, Wood's Bot. 1845, 423.

Very glaucous. — New England to Michigan and Virginia.

162. *CAREX PTYCHOCARPA*, Steudel, Cyper. Plant. 234.

C. digitalis, var. *glauca*, Chapm. Flora, 541.

Distinguished radically from *C. retrocurva* by its short culm (two to five inches high and shorter than the leaves), sessile small and inconspicuous staminate spike, contiguous and nearly or quite sessile pistillate spikes (only the lowest one long-peduncled and that radical or nearly so), the broad and elongated leafy bracts, and the narrower and more obtusely angled perigynium. Leaves one third to one sixth inch in width, glaucous. In its larger forms it bears some resemblance to *C. Careyana*, from which it is readily distinguished by the above characters. — Near Lake Hopatcong, N. New Jersey, Britton; Delaware, Canby; Florida, Chapman, "wet springy places in woods, Aspalaga," and "low forest bordering the Apalachicola River at Chattahoochee," Curtiss (distributed as *C. retrocurva*); New Orleans, Drummond.

163. *CAREX DIGITALIS*, Willd. Sp. Pl. iv. 298.

C. oligocarpa, Muhl. Descr. Gram. 242.

C. Van-Vleckii, Schwein. An. Tab.

C. oligocarpa, var. *Van-Vleckii*, Dewey, Sill. Journ. x. 281.

C. podostachys, Steud. Cyper. Plant. 232.

New England and Michigan to Florida and Louisiana.

164. *CAREX CAROLINIANA*, Buckley, Sill. Journ. xlv. 173.

I have lately examined Buckley's specimens which are deposited in the Torrey herbarium. The specimens are but two, and imperfect at that, but they appear to possess clear specific characters. The species is allied to *C. plantaginea* and *C. Careyana*. From both these species it differs widely in its narrow leaves (two to six lines wide), and few-flowered (3-6-flowered) pistillate spikes which are exerted on thread-like peduncles one to four inches long. The well marked and leafless sheaths and obtuse scales of the mostly long-peduncled staminate spikes at once distinguish it from all forms of *C. laxiflora*. The perigynia are evidently much smaller than in either *C. plantaginea* or *C. Careyana*. — Table Mountain, South Carolina, Buckley. Not since collected.

165. *CAREX PLATYPHYLLA*, Carey, Sill. Journ. 2d ser. iv. 23.

Massachusetts to Michigan and southward to Virginia, Curtiss.

166. *CAREX CAREYANA*, Torrey; Dewey in Sill. Journ. xxx. 60, f. 88.
New York to Pennsylvania and Washington and westward to Ohio and Michigan. Rare.

167. *CAREX PLANTAGINEA*, Lamarck, Dict. de Bot. iii. 392.

C. latifolia, Wahl. Königl. Acad. Handl. xxiv. 156.

Norway House, S. W. of Hudson's Bay, *Drummond*, to Michigan and New England, and southward in the mountains to North Carolina. A singular species.

C. Panicea, Tuckerman, Enum. Meth. 15. Mostly stouter narrow-leaved species, with thicker spikes; perigynium often strongly nerved, not conspicuously trigonous, often somewhat turgid; bracts and sheaths various.

168. *CAREX VAGINATA*, Tausch, Bot. Zeit. 1821, 557.

C. panicea, var. *sparsiflora*, Wahl. Fl. Lapp. 236.

C. phæostachya, Smith, Engl. Fl. 99.

C. sparsiflora, Steud. Nom. Bot. 296.

C. vaginata, var. *alto-caulis*, Dewey, Sill. Journ. 2d ser. xli. 227.

C. panicea, var. *refracta*, Olney, Exsicc. fasc. i. no. 24.

N. Labrador, *Turner*, to Bergen Swamp, Genessee Co., New York, *Paine*, and northwestward to Isle Royale, *Porter*, and Saskatchewan, *Bourgeau*. Local. Europe.

169. *CAREX POLYMORPHA*, Muhl. Descr. Gram. 239.

C. Halseyana, Dewey, Sill. Journ. xi. 313, f. 43.

C. panicea, var. *scariosa*, Olney, Exsicc. fasc. ii. no. 28.

Meadows, Massachusetts to North Carolina, and evidently also *Bolander's* 4741, from Mendocino, California (introduced?). Not common.

170. *Carex panicea*, Linn. Sp. Pl. 977.

Culm smooth: leaves glaucous: spikes colored: bracts an inch or two long: perigynium straw-colored or nearly purple, turgid, the sides scarcely nerved, mostly longer than the obtuse or muticous purple or purple-margined scale, the apex much straighter than in the next. — About Boston, *Herb.*, and Providence, Rhode Island, *Olney*. Introduced from Europe.

171. *CAREX TETANICA*, Schkuhr, Riedgr. Nachtr. 68, ff. 100 and 207.

C. refracta, Willd. Sp. Pl. iv. 297, in part; Schkuhr, Riedgr. Nachtr. 62 (excl. fig.).

C. Woodii, Dewey, Sill. Journ. 2d ser. ii. 249.

C. panicea. var. *tetanica*, Olney, Exsicc. fasc. i. no. 23; fasc. ii. no. 26.

C. panicea, var. *Woodii*, Olney, Exsicc. fasc. ii. no. 27.

C. panicea, var. *Bebbii*, Olney, Exsicc. fasc. i. no. 22.

C. Meadii, var. *Bebbii*, Arthur, Contr. Fl. Iowa, vi.

Culm slender, scabrous, at least above: leaves narrow, green: spikes pale, mostly greenish, mostly thin and loosely flowered, attenuated below: bracts, at least the lower ones, three inches or more in length: perigynium smaller, not turgid, greenish, prominently many-nerved: scale muticous or short-awned. — Meadows and borders of ponds from W. Massachusetts and Pennsylvania to Louisiana and Indian Territory and the Great Plains of British America.

This may be the *C. castanea*, Wahl. Königl. Acad. Handl. 155 (1803), an American species which its author says (Pl. Lapp. 250) is the same as *C. refracta*, Schkuhr, fig. 136. Schkuhr's figure, with a straight beak, is not the same plant as that described under the same name by Willdenow, whose description he copies. Both Schkuhr and Willdenow record *C. refracta* as a native of Mt. Cenis, but Sprengel (Syst. Veg. iii. 825) declares that they were both mistaken. The specimens found in Willdenow's herbarium by Schlechtendal (Linnæa, x. 266) were sent from Pennsylvania by Muhlenberg. It is evident that a plant from Mt. Cenis became mixed with the original specimens and was figured by Schkuhr (f. 136). This Mt. Cenis plant is evidently *C. vaginata*, Tausch. Wahlenberg's *C. castanea* can scarcely be referred to *C. vaginata*, as he describes the leaves as hirsute, a character, however, which exists in some weak forms of *C. tetanica*. Until a final disposition is made of this *C. castanea*, the *C. castanea* of Elliott should hold its later name, *C. Elliottii*, Schw. & Torr.

Willdenow's Species Plantarum, in which *C. refracta* is published, dates a year earlier than Schkuhr's Riedgräser, where *C. tetanica* is published; but many if not all of Schkuhr's plates were published before the Species Plantarum, and there is a constant cross reference between the two authors.

Var. MEADII.

C. Meadii, Dewey, Sill. Journ. xliii. 90.

C. panicea, var. *Meadii*, Olney, Exsicc. fasc. i. no. 21.

C. panicea, var. *Canbyi*, Olney, Exsicc. fasc. ii. nos. 24 and 25.

C. panicea, Olney, l. c., in part.

Differs from the last in its stiffer culm, thicker and densely flowered spikes, the upper one or two sessile or nearly so, and not attenuated at the base: perigynium larger. Bears the name of the late Dr. S. B. Mead, of Augusta, Illinois. — Wet meadows and borders of ponds; Providence, Rhode Island, *Olney*; Delaware Co., Pennsylvania,

Canby; North Carolina, *Hunter*; Georgia, Chapman; Houston, Texas, *Hall*; Ohio and Michigan to Nebraska, *Bruh'n* (St. Helena), and northward through Iowa to the Great Plains of British America, *Macoun*. Evidently rare east of New York.

172. *CAREX LIVIDA*, Willd. Sp. Pl. iv. 285.

C. limosa, var. *livida*, Wahl. Königl. Acad. Handl. xxiv. 162.

C. Grayana, Dewey, Sill. Journ. xxv. 141.

C. livida, var. *radicalis*, Paine; Dewey in Sill. Journ. 2d ser. xli. 329.

Peat bogs and pine barrens from New Jersey and New York to Labrador and Lake Superior and high northward; Alaska; also at Mendocino City, California, Bolander, according to W. Boott. Europe.

D. *Bicolores*, Tuckerman, Enum. Meth. 12. Small species with a beakless, more or less round or pyriform perigynium, which is commonly glaucous; terminal spike androgynous or all staminate.

173. *CAREX AUREA*, Nuttall, Gen. N. Amer. Pl. ii. 205.

C. mutica, R. Br. Frank. Narr. App. 763.

C. pyriformis, Schwein. An. Tab.

C. aurea, var. *androgyna*, Olney, Exsicc. fasc. i. no. 15.

C. concinna, Olney, Bot. King's Report, 372, as to Watson's specimens.

Variable.—Throughout the continent from Pennsylvania and Utah northward.

174. *CAREX BICOLOR*, Allioni, Fl. Ped. ii. 267.

Differs from the last in its somewhat larger size, glaucous appearance, white-nerved scales which do not cover the white perigynia, beakless perigynia, and shorter, broader leaves. Closely resembles small and androgynous forms of *C. aurea*, from which it is easily distinguished by the compressed perigynia, which are not fleshy, and the dark white-nerved scale.—Greenland and Labrador according to Dr. Boott. Mountains of Europe.

175. *CAREX RUFINA*, Drejer, Rev. Crit. Car. 28.

Very densely cespitose: culm short (one to four inches high), often curved, surpassed by the leaves: spikes four or five, approximate, oblong or elliptic, the terminal androgynous, staminate at the base: lowest bract much surpassing the culm: perigynium obovate, stipitate, short-beaked, covered by the uniformly colored reddish scale: stigmas two.—Greenland, *Vahl*. Norway.

E. *Digitata*, Fries, Corp. 187. Low species with ordinary leaves; sheaths membranaceous or hyaline and colored, either not prolonged into a bract or the

bract very short and not foliaceous; perigynium more or less three-angled, often hairy, the beak straight or nearly so. — The sheaths are very short and easily overlooked in *C. concinna*, and in *C. Boottiana* they rarely occur, as the spike is one and terminal.

176. *CAREX EBURNEA*, Boott, Hook. Fl. Bor.-Am. ii. 226, t. 225.

C. alba, Dewey, Sill. Journ. vii. 266.

C. alba, var. *setifolia*, Dewey, Sill. Journ. xi. 316.

Kentucky and Missouri northward to Mackenzie's River, and New England.

177. *CAREX CONCINNA*, R. Brown, Frankl. Narr. App. 763.

C. ornithopoda, Torr. Monogr. 412.

Saskatchewan, *Bourgeau*, Rocky Mts. of British America, according to Boott, and northward. I inserted this species in Coulter's Manual upon the authority of Olney (Bot. King's Report, 372), but I have since examined the specimen from the Wahsatch there referred to *C. concinna* and find it to be a small and immature *C. aurea*.

178. *CAREX MELANOCARPA*, Chamisso; Trautv. in Middend. It. I. part 2, pp. 7, 14, and 21, t. 4.

Cespitose: leaves linear, shorter than the culm: staminate spike solitary; pistillate spikes one or two, erect, very small, few-flowered, the upper one close to the staminate spike and sessile, the lowest remote, with the short peduncle included in the sheath of the bract: bract muticous or cuspidate, that and the scales orbicular-elliptic, rounded at the apex, dark purple and slightly puberulent on the back: perigynium oval, compressed, surpassing the culm, beakless, slightly puberulent, the orifice entire. Trautvetter's figure represents a peculiar plant with slender culm (three to six inches high) much surpassing the leaves, conspicuous staminate spike, and very obtuse scales to both staminate and pistillate spikes. — St. Lawrence Isl., off Alaska, Chamisso.

179. *CAREX RICHARDSONI*, R. Brown, Frankl. Narr. App. 763.

Named for Sir John Richardson of Arctic exploring fame. — Near Rochester, New York, Dewey, Central Michigan, Wheeler, Illinois and northwestward to Arctic America; N. W. Coast, Douglas; perhaps also *Bolander's* 6478, from Mendocino Co., California.

180. *CAREX PEDUNCULATA*, Muhl.; Willd. Sp. Pl. iv. 222.

Lancaster Co., Pennsylvania, *Porter*, to New England and northwestward to Norway House, British America, *Drummond*. Not common.

181. *CAREX BALTZELLII*, Chapman, List of Fla. Plants, 1845.

First detected in 1835 by Dr. Geo. F. Baltzell. — Dry sandy soil in Middle Florida. Rare.

182. *CAREX BOOTTIANA*, Bentham; Boott in Journ. Bost. Nat. Hist. Soc. 1845, v. 112.

C. picta, Steud. Cyper. Plant. 184.

Differs from the last in its diœcious inflorescence, solitary and thicker spike which is very densely flowered, more uniformly brown pistillate scales, straight, smoother, and emarginate perigynium, and narrower leaves. I refer this to the *Digitatæ* because its resemblance to *C. Baltzellii* is so close, and because empty and conspicuous sheaths sometimes occur. — Dr. Francis Boott, the greatest of caricographers, author of the monumental “Illustrations of the Genus *Carex*.” — New Orleans, *Drummond*; N. W. Alabama; Lawrence Co., *Peters*, and Winston Co., *Mohr*. Rare.

183. *CAREX TRUNCATA*, Boeckeler, Flora, 1858, 649.

“Bright green, cespitose: rhizome very short, the fibrils slender and pale: culms erect, four to ten inches high, flatly triquetrous, leafy, the basal sheaths leafless, lanceolate, and dull ferruginous, roughish above: leaves little longer than the culm, firm, plane, acuminate, nerved, the margins above and the nerves rough (one to two lines wide): spikes greenish white, densely many-flowered, the staminate linear-oblong, acute (six to seven lines long and a line wide), short-peduncled, furnished with a scale-like aristate bract, the pistillate about three, remote, erect (in flower), slender, cylindrical, subulate-acuminate, the upper short, short-stalked (four lines long), and near the staminate spike, the others rather long-peduncled and six to seven lines long: lower bracts leafy and sheathing, the lowest far surpassing the culm: scales small, hyaline and whitish with a green back, broadly obovate, the staminate obtuse and abruptly short-pointed, the pistillate amplexant, lightly 3-nerved, the apex truncate-emarginate and rough-aristulate: perigynium (young) about equalling the scale, obovate, nearly trigonous, green, beakless, the apex obtuse and slightly recurved, smooth: style deeply trifid. — New Orleans, *Drummond*, 423.” *C. Baltzellii*?

Section VIII. SPHÆRIDIPHORÆ, Drejer, Symb. Car. 9. Perigynium mostly short and rounded, three-angled in the Triquetræ, the beak straight and usually bifid, firm or hard in texture, not inflated, hairy or scabrous (smooth in *C. Whitneyi*); staminate spike one; pistillate spikes short (an inch or less long), usually globular or short-oblong, more or less sessile and approximate or the longer ones radical; bracts sheathless, short or obsolete; stigmas rarely two. — Low species of dry ground, with leaves all radical. The perigynia of *C. filifolia*

are thin in texture, and in both that species and *C. scirpoidea* the spike is single.

A. *Filifolia*, Tuckerman, Enum. Meth. 8. (*Scirpinæ*, Tuckm. l. c.) Spike one, androgynous or in *C. scirpoidea* commonly unisexual.

184. *CAREX SCIRPOIDEA*, Michx. Fl. Bor.-Am. ii. 171.

C. Michauxii, Schwein. An. Tab.

C. Wormskioldiana, Hornem. Fl. Dan. t. 1528.

C. Wormskioldii, Drejer, Rev. Crit. Car. 18.

C. scirpina, Tuckerman, Enum. Meth. 8.

High mountains of N. New England and northward to Greenland, and N. Michigan and northwestward; mountains of Colorado, Utah, Nevada, Montana, etc. Adjacent Asia. Norway.

185. *CAREX FILIFOLIA*, Nuttall, Gen. N. Am. Pl. ii. 204.

Uncinia breviseta, Torr. Monogr. 428.

Kobresia globularis, Dewey, Sill. Journ. xxix. 253.

Dry plains, Colorado to California and northward into British America.

Var. *VALIDA*, Olney, in herb.; Bailey, Coulter's Man. 374.

Colorado. *C. filifolia*, var., Boott, Proc. Acad. Philad. 1863, 77.

Var.? *MISER*.

C. Lyoni, Olney, Bot. King's Rep., et al., not Boott.

Low, usually two to four inches high, the leaves very rigid: pistillate portion of the spike not conspicuous: pistillate scales much narrower than in the species, the margins scarcely hyaline: perigynium much smaller and flatter, entirely concealed under the scale, oblong-obovate, smooth. — Alpine: Clover Mts., Nevada, alt. 10,000 ft., *Watson* 1220; Berthoud Pass, Col., *Vasey* 591, Twin Lakes, *Wolfe* 1001, and *Parry* 442, coll. of 1862, lat. 39°–41°. Fully mature specimens are a desideratum. *C. rupestris* is at once distinguished from this by its flat leaves.

B. *Montanæ*, Fries, Corp. 188. Spikes two to several, the lowest occasionally long-peduncled and radical; perigynium rounded, contracted above and below, mostly bearing two prominent ribs. — A puzzling group, best illustrated by *C. Pennsylvanica*, *C. umbellata*, and their immediate allies.

* *Perigynium abruptly rounded above, bearing a more or less prominent rib on each side.*

186. *CAREX PENNSYLVANICA*, Lamarck, Dict. de Bot. iii. 388.

C. marginata, Muhl.; Willd. Sp. Pl. iv. 261.

C. lucorum, Willd. Hort. Berol. Suppl. 63.

Stoloniferous, forming large patches: leaves usually as long as the slender culms (which are commonly less than ten inches high), narrow,

soft and grass-like: spikes one to three, approximate or usually contiguous (the two lowest very rarely more than a half-inch apart), globose, all sessile, commonly more or less dark-colored. Forms occasionally occur in which the beak is nearly as long as the body of the perigynium. Upon this form Willdenow founded his *C. lucorum*. — New England to Georgia and across the continent.

187. *CAREX VARIA*, Muhl.; Willd. Sp. Pl. iv. 259.

C. varia, var. *pedicillata*, Dewey, Sill. Journ. xi. 163.

C. collecta, Dewey, l. c. 314.

C. Pennsylvanica, var. *Muhlenbergii*, Gray, Gram. & Cyper. Exsicc.

C. Pennsylvanica, Torr. Monogr. 410.

C. varia, var. *minor*, Boott, Ill. 97.

Not stoloniferous: stouter, leaves broader (one and a half to two lines broad), usually shorter than the more or less prolonged culms (which range from ten inches to two feet in height), rather rigid and pale: spikes three to five, globose or oblong, scattered (from one half to an inch and a half apart), mostly light colored, the lowest often peduncled and commonly subtended by a conspicuous bract. In the large forms, which are rare, the spikes are all oblong and more or less peduncled. — Dry hillsides, Canada to Georgia. Less common than the last.

188. *CAREX RIGENS*, Bailey, Bot. Gaz. ix. 117.

C. varia, var., W. Boott, Proc. Am. Acad. xviii. 172.

C. varia, var. *Arizonica*, Bailey, Carex Cat.

Stoloniferous: rough throughout: culm six to twelve inches high, stiff, mostly longer than the stiff and rough long-pointed leaves, their bases surrounded by the fibrous remains of leaves: lowest bract green, nearly as long as the culm, the upper ones awl-pointed and little longer or shorter than their spikes: staminate spike an inch long, short-peduncled: pistillate spikes about three, pale, sessile, not aggregated, one fourth inch or less long or sometimes prolonged and staminate at the top: perigynium obovoid, large, angled, many-nerved, very gradually contracted into a stout base, gradually narrowed into a short entire or slightly toothed beak, thinly hairy, mostly shorter than the very acute thin scale: achenium obovoid. — S. Arizona, Tanner's Cañon, *Lemmon* 2904; Mexico, San Luis Potosi, *Schaffner* 547, *Parry & Palmer* 917.

189. *CAREX TURBINATA*, Liebmann, Mex. Halv. 77.

"Culm eight to twelve inches high, slender, trigonous, angles rough: leaves shorter than the culm, narrowly linear, carinate, margins rough:

head of spikes an inch long: spikes 4, the terminal half an inch long, staminate, the remainder pistillate, as long as the terminal, subsessile or shortly peduncled, oblong, approximate, few-flowered, furnished with bracts, the lowest one of which is leafy and surpassing the culm: staminate scales lanceolate, acute, compressed, mid-nerve green, side nerves reddish brown, margin thin: pistillate scales similar: perigynium stipitate, turbinate, ventricose, margined, beaked, many nerved, hispid, light green, often surpassing the scales, orifice of the beak bifid: achenium depressed-obovate or pear-shaped, apiculate, yellowish, smooth, base attenuated. — Southern Mexico, Central Cordillera of Oaxaca in the temperate region, June 1, Liebmann."

190. *CAREX EMMONSII*, Dewey, Torr. Monogr. 411.

C. alpestris, Dewey, Sill. Journ. vii. 268.

C. Davisii, Dewey, l. c. x. 279.

C. Novæ-Angliæ, var. *Emmonsii*, Carey, Gray's Man. 1848, 556.

C. lucorum, var. *Emmonsii*, Chapm. Flora, 539.

C. Emmonsii, var. *elliptica*, Boott, Ill. 97.

Dr. Ebenezer Emmons, 1798-1863, professor of natural history in Williams College, afterwards a professor in the Albany Medical College, one of the geologists of the New York State survey, and later geologist of North Carolina. — Canada to New Orleans and Texas, Hall, and Indian Territory, Butler.

191. *CAREX NOVÆ-ANGLIÆ*, Schweinitz, An. Tab.

C. deflexa, Hornem. Plantel. ed. 3, ii. 938.

C. pilulifera, L., var. *deflexa*, Drejer, Rev. Crit. Car. 54.

C. brevipes, W. Boott, Bot. Calif. ii. 246.

C. globosa, var. *brevipes*, W. Boott, Bot. Calif. ii. 485.

(See Bot. Gaz. x. 207.)

Its nearest ally is *C. varia*. Rare eastward in the United States. — Dry mountains from Massachusetts and New York to Greenland; Lake Tahoe to Bear Valley, California, Kellogg; E. Oregon, Cusick; Washington Terr., Brandegee; head of Yukon River, Lieut. Schwatka.

It is probable that another disposition of the Western specimens will need to be made when more material accumulates. They will probably need to be designated as var. *deflexa* of the species.

Var. *Rossii*, Bailey, Bot. Gaz. x. 207.

C. Rossii, Boott, Hook. Fl. Bor.-Am. ii. 222.

Named for Sir John Ross, the Arctic explorer. — Mountains from New Mexico to British America.

192. *CAREX PHYSORHYNCHA*, Steudel, Cyper. Plant. 219.

C. rhynchophysa, Liebm. Mex. Halv. 76, not C. A. Meyer.

"Culm two to five inches high, slender, triquetrous, rough on the angles: leaves short, narrowly linear, flat or reflexed, rough on the margins: head of spikes a half-inch long: spikes 3-4, the terminal staminate, the remainder pistillate, contiguous, sessile, few-flowered, furnished with bracts the lowest one of which is leafy and equalling the culm: staminate scales ovate-lanceolate: pistillate scales narrower, strongly acuminate, carinate, the nerve green, the side of the scale bordered by a narrow zone of dark purple: perigynium stipitate, elliptical, ventricose, round-trigonus, nerved, the beak slightly puberulent, glandulose-pilose below, the beak compressed, lightly toothed with the margins ciliate: achenium obovate, obtuse, trigonus, angles prominent, sides a little convex and slightly punctate. — So. Mexico, Chinantla in Puebla at 7,500 to 8,000 feet, May 1, Liebmann."

193. *CAREX FLORIDANA*, Schweinitz, An. Tab.

C. lucorum, var. *Floridana*, Chapm. Flora, 539.

C. nigro-marginata, var. *subdigyna*, Boeckeler, Linnæa, xli. 220.

Santee Canal, South Carolina, *Ravenel*, to Florida and Texas, *Reverchon*.

194. *CAREX NIGRO-MARGINATA*, Schweinitz, An. Tab.

C. lucorum, var. *nigro-marginata*, Chapm. Flora, 539.

Dry hillsides from New Jersey to North Carolina, *Curtis*.

195. *CAREX UMBELLATA*, Schkuhr, Riedgr. Nachtr. 75, f. 171.

C. umbellata, var. *vicina*, Dewey, Sill. Journ. xi. 317.

Dry knolls and hillsides, New England to Pennsylvania and Illinois and Indian Territory, *Butler*, and northwestward into British America; Oregon, *Henderson*.

Var. *BREVIROSTRIS*, Boott, Ill. 99, t. 294.

C. globosa, W. Boott, Bot. Calif. ii. 246; in part.

(See Bot. Gaz. x. 206.)

Mogollon Mts., New Mexico, *Greene*; near Golden City, Colorado, *Greene*; California, Cisco, *Kellogg*, Plumas Co., *Mrs. Austin*; British America, *Herb*.

196. *CAREX GLOBOSA*, Boott, Linn. Trans. xx. 125.

Transition to the *Phyllostachyæ*. — California, *Nuttall*; Oakland, *Bolander* 20 and 2298; Yosemite, *Bolander* 6196.

197. *Carex præcox*, Jacquin, Fl. Austr. v. 25, t. 446.

C. stolonifera, Ehrh. Calam. Exs. no. 99.

C. verna, Vill. Pl. Dauph. ii. 204; Dewey, Sill. Journ. xi. 314.

Dry fields, Salem, Ipswich, and Dedham, E. Massachusetts. First found in this country in 1826, at Salem, by Dr. C. Pickering. Introduced from Europe.

* * *Perigynium* various, usually gradually beaked, the ribs not prominent or none.

198. CAREX INOPS.

Culm slender but rigid, sharply angled, roughish, a foot high, from long and erect root-stalks, twice longer than the numerous, narrow, long-pointed and rigid leaves: spikes three or four, all aggregated and sessile at the top of the culm, the lowest subtended by a sheathless bract of about its own length, the terminal spike staminate and an inch long, the others half as long and staminate at the top: perigynium small, elliptic, nerveless or nearly so, brown below, very abruptly produced into a white straight and deeply cut beak, scabrous below, hairy on the shoulders and beak, about the length of the brown-centred, broad, acute scale. — Sandy grounds on subalpine slopes of Mt. Hood, Oregon, July, 1884, *L. F. Henderson*. In aspect much like *C. Pennsylvanica*. It lacks the ribbed and hardened character of the perigynia of that species and its allies, and the beak is straighter and more deeply cleft.

199. CAREX HALLERIANA, Asso, Syn. Pl. Arag. 135, t. 9, f. 2.

C. alpestris, All. Fl. Ped. ii. 270.

C. gynobasis, Vill. Pl. Dauph. ii. 206.

C. planostachys, Kunze, Suppl. Riedgr. 138, t. 35.

C. umbellata, var. *vicina*, Dewey, Bot. Mex. Bound. 232.

Culms slender, erect, rough on the angles above, shorter or longer than the narrow, revolute, rough and rather rigid leaves, which are sometimes somewhat recurved: staminate spike single, sessile or more commonly peduncled, slender, an inch or less long: pistillate spikes loosely few-flowered, those on the culm sessile or short-peduncled, the radical ones long-peduncled: perigynium obovate or elliptic, very strongly three-angled, green, much attenuated below, the short beak often recurved, very strongly many-nerved, puberulent, shorter than or equalling the green-backed and white-margined acute scale. A well-marked species with much the aspect of loose *C. umbellata*. All the European specimens which I have examined have broader and blunter scales than our plants. Dr. Boott, however, figures an Algerian specimen with very acute scales. — Texas: dry uplands at Dallas, *Reverchon*; hills at Houston, *Hall* 753; woods on the Colorado, *Wright*; Upper Guadalupe, *Lindheimer*; So. Mexico, *Schiede*. Europe.

C. Triquetra, Carey, MSS.; Olney in Proc. Am. Acad. 1868, 395. Plants taller; spikes mostly approximate at the top of the culm, oblong or cylindrical; perigynium conspicuously three-angled.

200. *CAREX CHAPMANI*, Sartwell, Exsicc. no. 113.

C. tenax, Chapm.; Dewey, in Sill. Journ. 2d ser. xix. 254.

Aiken, South Carolina, *Canby*, to Middle Florida, *Chapman*.

201. *CAREX DASYCARPA*, Muhl. Descr. Gram. 236.

Shady woods, South Carolina, Elliott, to Florida.

202. *CAREX PUBESCENS*, Muhl.; Willd. Sp. Pl. iv. 281.

Meadows and moist woods from New England to Kentucky and Fort Pierre, Dakota, Hayden.

203. *CAREX COULTERI*, Boott, MSS.; Hemsley in Bot. Biolog. Cent.-Am. iii. 473.

Differs from *C. pubescens* in its longer and narrower leaves, dentate orifice of the perigynium, and in its muticous scales which are pubescent on the back. Dr. Thos. Coulter, of Dublin, was an early botanical explorer in Mexico and California, and the first to reach the deserts of the Colorado. — So. Mexico, Zimapan, Coulter 1620; Santa Fé, Valley of Mexico, Bourgeau 671.

204. *CAREX TRIQUETRA*, Boott, Linn. Trans. xx. 126.

C. monticola, Dewey, Bot. Mex. Bound. 229.

Culm six to eighteen inches high, stiff, smooth, mostly longer than the flat smooth leaves: lower bract equalling or exceeding the culm, conspicuously sheathing: spikes rather loosely flowered, an inch and a half or less long, the lowest commonly more or less remote and peduncled: perigynium large, broadly oval or oboval, very sharply angled, almost beakless, few and indistinctly nerved, sparsely pubescent, much broader and usually longer than the green conspicuously brown-margined obtuse or muticous scale. — Transition to the *Dactylostachyæ*. — California, Nuttall; San Diego, *Parry*, *Pringle*; Lassen Co., *Mrs. Austin*; Sierra Madre, *Nevins*; Ojai, *Peckham*.

205. *CAREX WHITNEYI*, Olney, Proc. Am. Acad. vii. 394.

Differs from the last in its hairy leaves, sheathless bracts, thinner and more slender perigynia, which are smooth, prominently nerved and beaked (the orifice erose), and shorter than the whitish chaff-like acuminate scale. The spikes upon large specimens resemble small heads of barley. Transition to the *Secalinæ* of the Old World. Named for Prof. J. D. Whitney, director of the Geological Survey of California. — California: Mt. Shasta, *Pringle*; Yosemite, *Brewer* 1639, *Bolander* 6198; Lassen Co., *Mrs. Austin*.

Section IX. PHYLLOSTACHYS, Carey, Gray's Man. 1848, 538. Perigynium much as in the *Montanæ*; spike one, staminate above; pistillate flowers few, often remote, usually on a more or less zigzag rhachis; scales prolonged and leaf-like (scarious and often short in *C. Geyeri*). — A singular section, to be regarded, probably, as an offshoot from the *Montanæ*. It is connected with the *Laxifloræ* by *C. multicaulis*, which is related to *C. Hitchcockiana*.

A. *Bractoides*, Bailey, Bot. Gaz. x. 208. Culms mostly much shorter than the leaves; staminate flowers inconspicuous; perigynium small, the beak produced to half its length or more; scales very green and much dilated, often concealing the perigynia, and readily mistaken for bracts.

206. *CAREX WILLDENOVII*, Schkuhr, Riedgr. Nachtr. 33, f. 145.

C. Willdenovii, var. *pauciflora*, Olney, Hall's Pl. Tex. 25.

Karl Ludwig Willdenow, 1765–1812, Professor of Botany in Berlin. — New England to North Carolina and Texas.

207. *CAREX STEUDELII*, Kunth, Enum. Plant. ii. 480.

Ernst Gottlieb Steudel, 1783–1856. — New York to Kentucky and Illinois. “Florida and westward,” Chapman.

208. *CAREX BACKII*, Boott, Hook. Fl. Bor.-Am. ii. 210, t. 209.

Sir George Back, an Arctic explorer. — Mt. Tom, W. Massachusetts, *Whitney*, to Ohio and Michigan and northwestward to the Saskatchewan, *Bourgeau*, and Cumberland House, *Richardson*; Colorado, *Hall & Harbour* 612.

B. *Phyllostachys*, Bailey, Bot. Gaz. x. 208. Culms all as long or nearly as long as the leaves; staminate flowers conspicuous; pistillate flowers very few and large; beak very short.

209. *CAREX GEYERI*, Boott, Linn. Trans. xx. 118.

Karl Andreas Geyer, 1809–53, a German botanist who travelled in this country from 1834 to 1845. — Colorado, Utah, Montana, and E. Oregon, *Cusick*.

210. *CAREX MULTICAULIS*, Bailey, Bot. Gaz. ix. 117.

C. Geyeri, Boott, Ill. t. 105, in part.

Culms very numerous, one to three feet high, stiff and wiry, terete or in weak specimens obtusely angled, smooth or minutely scabrous beneath the flowers, their sheaths leafless or produced into stiff and appressed tips an inch or so long, or on the barren culms three to six inches long and spreading: scales, at least the lower ones, leaf-like and prolonged into a slender tip often exceeding the culm, their bases dilated and hyaline-margined: pistillate flowers two to six, the lower one often remote: perigynium very large (three to four lines

long), strongly triquetrous, the sides at maturity cross-wrinkled and often concave, much contracted into a stipitate base, very finely many-nerved (rarely the nerves obsolete below), tightly enclosing the minutely punctate perigynium, the very short orifice entire. A singular plant. The culms remain a year after fruiting. — California: Yosemite, *Torrey* 544; Ukiah, *Bolander* 39; Big Trees, *Brewer* 1635 and 2306; Plumas Co., *Mrs. Ames*; Duffield's Ranch, *Bigelow*; Alamandon, S. W. Oregon, *Howell*.

Section X. LAMPROCHLÆNÆ, Drejer, Symb. Car. 10. (*Deflexocarpæ*, Bailey, Coult. Man. 373, in part.) Perigynium smooth (rarely minutely serrate on the margins), firm in texture or even horny, mostly glossy or shining brown or black, lightly nerved or nerveless, bearing a short beak; scales mostly obtuse with hyaline margins; spike one (except *C. pedata*, *C. obesa*, and *C. Schaffneri*), small, staminate above; stigmas mostly three. — Small species, mostly boreal or alpine.

A. *Pulicares*, Tuckerman, Enum. Meth. 7. Perigynium spindle-shaped or narrowly ovate, stipitate, deflexed or widely spreading at full maturity.

211. *CAREX PYRENAICA*, Wahl. Königl. Acad. Handl. xxiv. 139.

C. micropoda, C. A. Meyer, Cyp. Nov. 210, t. 6.

Callistachys Pyrenaica, Heuffl. Flora, 1844, 528.

Colorado, *Hall & Harbour* 608, *Vasey* 590, *Brandege*, *Englemann*; Utah, Uintas, *Watson* 1218; S. E. Oregon, *Cusick*; Alaska, *Meyer*. Europe.

212. *CAREX NIGRICANS*, C. A. Meyer, Cyp. Nov. t. 7.

Colorado, *Hall & Harbour* 609, *Vasey*; Utah, Bear River Cañon, *Watson* 1217; Mt. Shasta, Calif., *Brewer* 1379; Oregon, *Hall* 569, *Howell*, *Henderson*; Alaska, *Chamisso*. Adjacent Asia.

213. *CAREX SCHAFFNERI*, Boeckeler, Flora, 1878, 39.

"Glaucous green, shining: culms usually two, erect, three to six inches high, filiform, compressed-triangular, striate, smooth, very leafy at the base: leaves crowded and spreading, rigid, much shorter than the culm (one to one and a half inches long), twice longer than the last year's sheathing fascicles, setaceous, straight or slightly curved, canaliculate, margins above serrulate: spikes two, androgynous (probably staminate at the top), unequal, crowded at the top of the culm, chestnut-colored, oblong-ovate or ovate, acutish, 10-15-flowered (three to four lines long): bracts short, scale-like and cuspidate: scales broadly ovate, obtuse, broadly amplexant at the base, the keel green,

somewhat 3-nerved, mucronate, the sides light chestnut-colored, the margins paler and membranaceous: perigynium (immature) little longer than the scale, sessile, oblong-lanceolate, compressed-trigonal, smooth, the orifice obliquely truncate and reddish yellow: stigmas three. — So. Mexico, Valley of Mexico, Dr. J. G. Schaffner.

B. *Rupestris*, Tuckerman, Enum. Meth. 8. (*Obtusata*, Tuckm. l. c.) Perigynium mostly ovate and appressed to the rhachis.

214. CAREX PEDATA, Wahl. Fl. Lapp. 239, t. 14.

Densely caespitose: culms stiff, one to five inches high, very obtusely angled, smooth, longer than the numerous erect or recurved leaves: spikes two to four, the terminal staminate and a fourth inch or less long, the others pistillate and contiguous, very small, one to five-flowered, sessile or very nearly so, borne in the axil of a very short bract which has a dilated, colored, and loosely clasping base: perigynium small, broadly round-ovate, rather thin in texture, nerveless, pale below, abruptly contracted into a stout purple often hyaline-tipped beak, usually a little longer than the very obtuse purple and thin margined scale. Transition to the *Digitata*. The *Carex pedata* of Linnæus, Sp. Pl. ed. iii. 1384, is not identified. — Greenland, *Fries*, *Andersson*. N. Europe. Asia.

215. CAREX OBESA, Allioni, var. MINOR, Boott, Ill. 161, t. 535.

C. supina, Willd.; Wahl. Königl. Acad. Handl. xxiv. 158.

C. Schkuhrii, Willd. Sp. Pl. iv. 264.

C. sphærocarpa, Willd. l. c. 265.

Distinguished from the last by its mostly larger size, sharply angled culm, thicker pistillate spikes, hard and conspicuously angled perigynium, which is usually shorter than the acute scale. — Bear Lake, British America, *Richardson*, and Saskatchewan, *Bourgeau*, according to Boeckeler; Greenland, *Herb*. Europe. Asia.

216. CAREX OBTUSATA, Liljeblad, Königl. Acad. Handl. 1793, 69, t. 4.

C. spicata, Schkuhr, Riedgr. 11, f. 15.

C. microcephala, C. A. Meyer, Ledeb. Fl. Alt. iv. 205.

C. affinis, R. Br., Frankl. Narr. App. 763.

C. Backiana, Dewey, Sill. Journ. xxix. 250.

C. obesa, var. *monostachya*, Boeckeler, Linnæa, xli. 185.

Colorado, *Hall & Harbour* 606; South Park, *Wolf* 1003; Georgetown, *Patterson*; Little Belt Mts., Montana, 7,500 ft. alt., *Scribner*; Saskatchewan, *Bourgeau*, etc., and northward.

217. CAREX RUPESTRIS, Allioni, Fl. Ped. ii. 264, t. 92, f. 1.

C. petræa, Wahl. Königl. Acad. Handl. xxiv. 139.

C. attenuata, R. Br. Frankl. Narr. App. 763.

C. Drummondiana, Dewey, Sill. Journ. xxix. 251.

C. rupestris, var. *Drummondiana*, Bailey, Carex Cat.

High mountains of Colorado, Hall & Harbour 273, Sierra Blanca, Hooker & Gray, Gray's Peak, *Patterson*, and northward to Greenland, *Herb.* Europe.

Section XI. LEPTOCEPHALÆ. Perigynium thin in texture, green, oblong or lanceolate or linear in general outline, beakless or nearly so; spike one, staminate above, thin and slender; stigmas mostly three. — Small and slender grass-like North American species.

218. *CAREX POLYTRICHOIDES*, Muhl. in Willd. litt. in Wahl. Königl. Acad. Handl. xxiv. 139; Willd. Sp. Pl. iv. 213.

C. leptalea, Wahl. l. c.

C. microstachya, Michx. Fl. Bor.-Am. ii. 169.

Florida and Texas to Newfoundland and Oregon.

219. *CAREX LYONI*, Boott, Hook. Fl. Bor.-Am. ii. 209, t. 208.

Culm very short (one to two inches): leaves rigid, canaliculate, almost needle-like, their points callous and shining and truncate, surpassing the culm; scales narrow, rather acute, about the length of the lanceolate, smooth, slightly toothed perigynium. — Founded upon very immature specimens collected by *Drummond* in the Rocky Mts. of British America.

220. *CAREX LEOCARPA*, C. A. Meyer, Cyp. Nov. 208, t. 5.

C. anthoxantha, Presl, Reliq. Hænk. 203, fide Boeckeler.

Culm slender, erect, six to fifteen inches high: leaves flat but narrow, lax, about as long as the culm: spike about an inch long, commonly either wholly staminate or wholly pistillate: perigynium lance-linear (about two lines long), pointed, nerved at least below, commonly entirely smooth, ending in a blunt and perfectly entire orifice, usually twice longer than the obtuse scale: stigmas three. Habitually taller and laxer than the next. — Alaska, *Dall*, *Mertens*; Nootka Sound, Vancouver's Isl., Presl.

221. *CAREX CIRCINATA*, C. A. Meyer, l. c. 209, t. 6.

Culm slender, two to ten inches high, often curved: leaves filiform, firm, equalling or surpassing the culm, usually curved: spike half an inch to an inch long: perigynium nearly linear (nearly three lines long), produced very gradually to a 2-lipped orifice, somewhat rough on the margins, lightly nerved, exceeding the linear purple-margined obtuse and white-tipped scale: stigmas three or two. — Alaska, *Dall*, *Bongard*.

Section XII. PHYSOCEPHALÆ. Spike one, globular or short-oblong, staminate at the apex; perigynium straw-colored, paper-like, more or less inflated; stigmas three. — Aside from the three species which follow, the section is represented in the Caucasus by the remarkable *C. physodes*, Bieb.

222. *CAREX FRASERI*, Andrews, Bot. Rep. t. 639.

C. Fraseriana, Sims, Bot. Mag. t. 1391.

Mapania sylvatica, Pursh, Fl. i. 47.

C. lagopus, Muhl. Descr. Gram. 265.

A rare and remarkable plant, bearing little general resemblance to the next two, though agreeing with them in general characters of inflorescence and perigynium. A rhacheola is often found within the perigynium. Named for John Fraser, 1750–1811, an ardent English botanist who visited America three times, in his last expedition discovering this singular *Carex*. — Near Wytheville, Virginia, *Shriver*; Little Doe River near Roan Mt., Tennessee, *Dr. Gray*; near Morgan Town and Table Mt., Fraser in 1808, and Grandfather Mt., *Gray et al.*, N. Carolina.

223. *CAREX BREWERI*, Boott, Ill. 142, t. 455.

Culm three to ten inches high, obtusely angled, rigid, smooth, exceeding the filiform stiff leaves: spike a half inch to an inch long, ovate or globular, the pistillate portion more conspicuous: perigynium bladder-like, about as broad as long, exceeding the scale. — California in the Sierras, Mt. Shasta, *Brewer, Pringle, et al.*, Mt. Dana, *Bolander*, Lassen's Peak, *Brewer*; Oregon, *Hall*, Mt. Hood, *Henderson*.

224. *CAREX ENGELMANNI*.

Culms slender but erect, four to six inches high, about the length of the numerous very slender bristle-like leaves: spike small, nearly globular, two to three lines broad, the staminate flowers inconspicuous: perigynium lanceolate, about two lines long, very delicate in texture, flat, somewhat shining, nerveless, the long apex empty, the beak entire or nearly so, about the length of the thin brown acute scale. — Alpine slopes, Colorado, 1874, *Dr. George Engelmann*, probably near Colorado Springs.

SUBGENUS II. VIGNEÆ, Koch, Syl. Fl. Germ. 748. *Vigneæ*, Beauvois, Lestib. Fam. Cyper. Staminate flowers few and inconspicuous, borne at the base or apex of the pistillate spikes. Pistillate flowers in short and sessile spikes (or spike single in some cases), which are commonly more or less aggregated into heads or even paniced. Cross-section of the perigynium plano-convex in outline. Styles two

and achenium lenticular. — The spikes, especially the uppermost, usually have contracted bases when the staminate flowers are borne below the pistillate ones, and empty scales at the top when the staminate flowers are borne above.

Section XIII. ACROARRHENÆ, Fries, Summa, 73. Staminate flowers borne at the top of the spikes (or, in the *Multifloræ* and *Arenariæ*, spikes often wholly staminate and the plants occasionally dioecious).

A. *Fætidæ*, Tuckerman, Enum. Meth. 10. (*Curvules*, Tuckm. l. c. in part. *Chordorhizæ*, Fries, Summa, 73.) Spikes tawny or brown, not elongated, very densely aggregated into a continuous globose somewhat chaffy head; perigynium ovate or ovate-lanceolate, nerveless or nearly so, mostly thin in texture.

225. *CAREX INCURVA*, Lightfoot, Fl. Scot. 544, t. 24, f. 1.

C. juncifolia, All. Fl. Ped. ii. 264, t. 92, f. 4.

C. psammogæa, Steud. Plant. Cyper. 187.

Colorado, Gray's Peak, *Patterson*, alpine ridge near Middle Park, *Parry*; Rocky Mts. of British America, *Drummond*, and northward to Kamtschatka, *Wright*, and Greenland, *Vahl*. Europe.

226. *CAREX CHORDORHIZA*, Ehrhart, Phyt. no. 77.

C. fulvicoma, Dewey, Sill. Journ. xxix. 249.

Cold bogs from Vermont to Illinois and Iowa, and northward to Hudson's Bay. Not common. Europe.

227. *CAREX FÆTIDA*, Allioni, Fl. Ped. ii. 265.

Mountains of Colorado, Wyoming, and Utah, and in California, *Brewer* 2066 and 2304, Summit Camp, *Dr. Kellogg*.

228. *CAREX STENOPHYLLA*, Wahl. Königl. Acad. Handl. xxiv. 142.

C. juncifolia, Schkuhr, Riedgr. 26, f. 32.

C. duriuscula, C. A. Meyer, Cyp. Nov. 214, t. 8.

C. pachystylis, Gay, Ann. Sci. Nat. x. 301.

C. Deinbolliana, Gay, Ann. Sci. Nat. xi. 183.

Emmet Co., Iowa, *Cratty*, to Colorado and northward to the Saskatchewan.

229. *CAREX HOODII*, Boott, Hook. Fl. Bor.-Am. ii. 211, t. 211.

A dubious species founded upon immature specimens from the Columbia, collected by *Scouler*. Subsequent specimens collected in California have been referred to it, but they belong to *C. Brongniartii*, var. *densa*, and *C. muricata*, var. *confixa*, which see for further notes on *C. Hoodii*. It is probable that *Scouler's* plant is *C. muricata*, var.

confixa. Meyer's *C. congesta* from Kamtschatka, referred here by Dr. Boott, has staminate flowers at the base of the spikes, and is to be referred to *C. festiva*. *C. Hoodii* is probably the same as *C. anthericoides*, Presl, Reliq. Hænk. 204, an older species.

B. *Vulpinæ*, Kunth, Enum. Plant. ii. 383; Nym. Consp. Fl. Eur. 781. (*Vulpinoidæ*, Kunth, l. c. 381. *Muricata*, Fries, Summa, 73, in part.) Spikes mostly yellow or tawny when mature, densely aggregated or sometimes somewhat scattered below or even panicle; perigynium thick in texture, spongy at the base, mostly stipitate, bearing very conspicuous nerves which converge below, and which are especially prominent on the outer side.

* *Beak shorter than or about the length of the body of the perigynium.*

230. *CAREX NERVINA*, Bailey, Bot. Gaz. x. 203, t. iii. ff. 6, 7, 8.

Culm flat and weak, smooth, striate, about eighteen inches high from a woody root: leaves ample, broad, striate above and minutely nodulose below, the upper equalling the culm, the lower short (one half to three inches long) from loose truncate sheaths: spikes densely aggregated into a fulvous head which is one half or three fourths inch long and subtended by one or two setaceous bracts of half its length: perigynium lanceolate, spongy and compressed at the base, firm in texture, marginless and smooth throughout, about the length of the very thin acute scale: achenium oval. — Summit Camp, California, July 10, 1870, *Dr. Kellogg*.

231. *CAREX CONJUNCTA*, Boott, Ill. 122.

C. vulpina, Carey, Gray's Man., 1848, 512, not Linn.

Ohio, Kentucky, and Illinois; said by Dewey to have been found by Hayden at Fort Pierre, Dakota. Rare. Readily distinguished by its flat culm.

232. *CAREX MACROCEPHALA*, Willd. in Herb.; Sprengel, Syst. iii. 808.

Leaves a foot or more long, stiff, rough on the edges: culm a foot or less long, very stiff, three-angled, smooth, shorter than the leaves: head very large (two inches or more long and an inch or more broad), dense, chaffy, comose from the conspicuous points of the perigynia, subtended by slender bracts shorter than itself: perigynium about a half-inch long and nearly a quarter-inch broad, bearing thin margins which are often serrate, the slender beak about the length of the body, a little longer than the very sharp scale. — A remarkable species, growing in sand on the sea-shore of Oregon and Washington Territory, sending a hard root-stock perpendicularly into the ground. Japan.

* * *Beak twice or more the length of the body of the perigynium.*

233. *CAREX STIPATA*, Muhl.; Willd. Sp. Pl. iv. 233.

C. vulpinoidea, Torr. Monogr. 390.

C. stipata, var. *maxima*, Chapm. Flora.

Florida to Newfoundland, *La Pylaie*, and British America, Oregon, *Hall*, *Henderson*, California, *Sierra Valley*, *Lemmon*, and New Mexico, *Fendler*.

234. *CAREX CRUS-CORVI*, Shuttleworth; Kunze, Riedgr. Suppl. 128, t. 32.

Forms *orthoclados* and *orthostachys*, Kunze, l. c. 166, 167, t. 42.

C. siccaformis, Boott, Journ. Bost. Nat. Hist. Soc. v. 113.

C. Halei, Dewey, Sill. Journ. 2d ser. ii. 248.

Florida to Texas and Indian Territory, *Butler*, and northward to Illinois, Wisconsin, and Red Wing, Minnesota, *Sandberg*.

C. Multifloræ, Kunth, Enum. Pl. ii. 387. (*Paniculatae*, Kunth, l. c. 389, Nym. Consp. Fl. Eur. 781. *Bracteosæ*, Kunth, l. c. 378. *Siccatae*, Carey, Gray's Man. 1848, 539, in part. *Intermediæ*, Nym. Consp. Fl. Eur. 782. *Distichæ*, Christ, Cat. Eur. Car. 8.) Heads various, mostly loosely flowered, sometimes a panicle, yellow or tawny; spikes short (rarely longer than broad); staminate flowers sometimes occupying whole spikes in the middle or at the apex of the head; perigynium mostly small and short and nearly nerveless, or in some species becoming nearly lanceolate and more or less prominently nerved, firm in texture, usually numerous.

* *Spikes conspicuously paniced.*

235. *CAREX DECOMPOSITA*, Muhl. Descr. Gram. 264.

C. paniculata, var. *decomposita*, Dewey, Sill. Journ. x. 275.

Florida to W. Louisiana and northward to New York, Michigan, and Illinois. Not common.

* * *Spikes in a simple or nearly simple head.*

236. *CAREX GAYANA*, Desvauux, Fl. Chili, 205.

Plant nearly or quite diœcious. The species is very little understood. Colorado to Sonora Pass, California, *Brewer* 1865, and southward. South America.

Var. ? *HYALINA*.

Differs from the species in bearing an interrupted slender head (an inch long and nearly linear), the lowest spike of which is entirely distinct and subtended by a conspicuous short bract, and in the very thin hyaline scales which are obtuse or very shortly mucronate. The perigynium is rather large, less coriaceous, not shining. Probably a distinct species, but I have fragmentary specimens which appear to be intermediate between this and the type of the species. Evidently

diœcious. Resembles *C. prægracilis*. — Sonora, Mexico, *Dr. Geo. Thurber*.

237. *CAREX MARCIDA*, Boott, Hook. Fl. Bor.-Am. 212, t. 213.

Often diœcious, or nearly so. Imperfectly understood. — Colorado to California and northward into British America.

Var. *DEBILIS*.

Small and slender (a foot or less high), the culms mostly somewhat exceeding the very narrow and long-pointed leaves: head narrow, a half-inch or less long: perigynium smaller, more contracted at the base. — Harney Valley, Oregon, *Howell*.

238. *CAREX TERETIUSCULA*, Goodenough, Linn. Trans. ii. 163, t. 19.

C. teretiuscula, var. *major*, Koch, Fl. Germ. 867.

New England to Pennsylvania and northwestward to the Saskatchewan, *Hb. Hooker*; S. California, *Parish*.

Var. *RAMOSA*, Boott, Ill. 145.

C. prairea, Dewey, Wood's Bot. 1861, 750.

C. paradoxa, Boott, Hook. Fl. Bor.-Am. ii. 213.

Head slender and interrupted, often branched below; perigynium longer and usually thinner in texture than in the species. — From New York to Oregon, *Henderson*.

239. *CAREX ALOPECOIDEA*, Tuckerman, Enum. Meth. 18.

C. alopecoidea, var. *sparsi-spicata*, Dewey, Sill. Journ. viii. 350.

C. cephalophora, var. *maxima*, Dewey, Sill. Journ. xliii. 92.

"Woods, W. New York to Pennsylvania, Michigan, etc.," Gray's Manual. I have seen typical specimens only from Penn Yan, New York, *Sartwell*, Ludlowville, New York, *Lord*, and Lansing, Mich. Rare.

240. *CAREX VULPINOIDEA*, Michx. Fl. Bor.-Am. ii. 169.

C. microsperma, Wahl. Königl. Acad. Handl. xxiv. 144.

C. multiflora, Muhl.; Willd. Sp. Pl. iv. 243.

C. setacea, Dewey, Sill. Journ. ix. 61.

C. scabrior, Sartw. Exsicc. no. 72.

C. vulpinæformis, Tuckerman, Enum. Meth. 9.

Throughout the States east of the Mississippi, especially northward, and northward to Winnipeg, *Bourgeau*, and perhaps farther westward. Exceedingly variable.

Var. *PLATYCARPA*, Olney, Hall's Pl. Texanæ, 25; Bailey, Coulter's Man. 392.

C. vulpinoidea, var. *Drummondiana*, Boeckeler, Linnæa, xxxix. 96. Louisiana to Texas and Indian Territory.

241. CAREX BRONGNIARTII, Kunth, Enum. Pl. ii. 380.

C. hypoxanthus, Steud. Plant. Cyper. 193.*C. glomerata*, authors, not Thunb.

Distinguished from *C. vulpinoidea* by the looser flowered and chaffy spikes, the large perigynium, the short and straw-colored heads (usually an inch and a half or less long), and the absence (or nearly so) of conspicuous bracts. The Pacific slope representative of *C. vulpinoidea*. — Arizona; California, *Kellogg & Harford* 1068; wet meadows, Mendocino City, *Bolander* 4808; Oakland Slough, *Bolander* 6204; Oregon, *Hall*. Chili.

Var. Densa.

C. Xalapensis, Kunth, Enum. Pl. ii. 380.*C. Hoodii*, Boott, Ill. 17, as to Californian specimens.*C. Brongniartii*, Boott, Ill. t. 402.*C. paniculata*, W. Boott, Bot. Calif. ii. 232, not Linn.

Heads more dense, mostly thickest at the base (often nearly an inch in width): perigynium broad-lanceolate (much longer than in the type), long beaked and very prominently nerved. — California, *Palmer* 389 (San Diego Co.), *Bigelow*, *Brewer*, and others. I suspect that *C. anthericoides*, Presl, and most of *C. Hoodii*, Boott, are to be referred here.

242. CAREX LEIORHYNCHA, C. A. Meyer, Mem. Acad. St. Petersb. i. t. 9.

Aspect of ordinary forms of *C. vulpinoidea*: lowest bract leafy, prolonged: head interrupted, narrow, an inch to three inches long, pale: perigynium oblong-ovate, membranaceous, nerved, whitish, very smooth throughout, the beak sharply toothed, longer than the ovate-elliptic long-mucronate one-nerved scale. — Along the coast, probably from Oregon northward. Siberia. Little known in America.

243. CAREX DISTICHA, Hudson, Fl. Angl. 403.

C. intermedia, Gooden. Linn. Trans. ii. 154.*C. modesta*, Gay, Ann. Sci. Nat. x. 304.*C. Sartwellii*, Dewey, Sill. Journ. xliii. 90.*C. schedonautos*, Steud. Plant. Cyp. 189.

Mostly in dry places from New York to Utah and northward into British America. Europe.

D. *Arenarice*, Kunth, Enum. Pl. ii. 376; Tuckerman, Enum. Meth. 9. Spikes longer than in the last section, linear or nearly so, aggregated into short, almost globose heads; perigynium lanceolate or ovate-lanceolate, mostly larger and more delicate in texture; scales awn-pointed or very acute. Staminate flowers variously situated.

244. *CAREX* POTOSINA, Hemsley, Biol. Cent.-Am. iii. 474.*C. Schaffneri*, W. Boott, Proc. Am. Acad. xviii. 172, not Boeckl.*C. fuscolutea*, Boeckeler, Engler's Bot. Jahr. vii. part iii. 278.

"Rootstock creeping, branching, clothed with imbricated brown scales that become fibrous: culm about a foot high, slender, scabrous above on the sharp angles: leaves about equalling the culm, one line broad, attenuated into a long and filiform extremity, flat or conduplicate above: head about an inch long, of three or more oblong sessile clusters of lanceolate androgynous spikes, the upper clusters crowded, the lowest distinct and rarely borne on a long radical peduncle: spikes five or six lines long, staminate above: bracts filiform from an ovate several-nerved green-keeled hyaline-margined clasping base, the lowest much longer than the head, the next one or two often exceeding it: scales hyaline, pale chestnut-colored with a green keel, ovate, acute or roughly awn-pointed, exceeding the perigynia which are pale brown, ovate or lanceolate (two lines long), tapering at the base, covered with irregular yellowish somewhat scurfy tubercles, obliquely cut at the top and ending in two long subulate rough teeth, serrate on the green margins." — San Luis Potosi, Northern Mexico, *Schaffner* 546, 221.

245. *CAREX* DOUGLASHI, Boott, Hook. Fl. Bor.-Am. ii. 213, t. 214.*C. Nuttallii*, Dewey, Sill. Journ. xliii. 92.*C. Meekii*, Dewey, l. c. 2d ser. xxiv. 48.*C. Douglasii*, var *minor*, Olney, Bot. King's Rep. 363.*C. Fendleriana*, Boeckeler, Linnæa, xxxix. 135.

A singular plant, of which mature perigynia are rarely if ever seen. Wyoming to New Mexico, California, and Oregon.

Var. *BRUNNEA*, Olney, Bot. King's Rep. 363.

Carson City, Nevada, *Watson* 1226; California, *Bolander* 4549 and 4550.

246. *Carex arenaria*, Linn. Sp. Pl. 973.

Extensively creeping: culm about a foot high, scabrous on the angles above: spikes rather numerous, those at the apex of the head staminate, the intermediate ones staminate at the summit, the lowest pistillate: perigynium ovate-oblong or ovate-lanceolate, the upper half produced into a conspicuous serrate wing-border, nerved, the beak sharply bifid. — Protected sea-beaches near Norfolk, Virginia, July, 1870, *McMinn*. The well-known Sand *Carex* of Europe.

E. *Muhlenbergianæ*, Tuckerman, Enum. Meth. 9. Spikes green or nearly so when mature, aggregated or scattered, never in compound heads; perigynium mostly short-ovate, in most cases not conspicuously nerved. Staminate flowers uniformly borne at the top of the spike.

- * Plants slender (except *C. sparganioides*) and the spikes more or less scattered (except in *C. muricata*, var. *confixa*).

247. *CAREX TENELLA*, Schkuhr, Riedgr. 23, f. 104.

C. disperma, Dewey, Sill. Journ. viii. 266.

C. gracilis, Gray, Sill. Journ. 2d ser. iv. 19.

From New Jersey to California and northwestward into British America.

248. *CAREX ROSEA*, Schkuhr, Riedgr. Nachtr. 15, f. 179.

Labrador, *Storer*, and the Northeastern States to Lake Winnipeg, *Bourgeau*.

Var. *RADIATA*, Dewey, Sill. Journ. x. 276.

C. neglecta, Tuckerman, Enum. Meth. 19.

C. disperma, Kunze, Riedgr. Suppl. 131, t. 33.

C. rosea, var. *minor*, Boott, Ill. 81.

Throughout the States east of the Mississippi and those bordering it on the west, north of North Carolina. More common than the species, from which it differs chiefly in its slenderness and few-flowered spikes.

Var. *RETROFLEXA*, Torrey, Monogr. 389.

C. retroflexa, Muhl.; Willd. Sp. Pl. iv. 235.

C. bicostata, Olney, Exsicc. fasc. iv. no. 17.

Throughout the States east of the Mississippi, and Limestone Gap, Indian Territory, *Butler*. Evidently more common southward.

249. *CAREX VALLICOLA*, Dewey, Sill. Journ. 2d ser. xxxii. 40.

"Culm six to twelve inches high, very slender, slightly scabrous: leaves half a line broad, shorter than the stem: bracts roughly cuspidate from a broad hyaline-margined base, the lowest equalling or exceeding its spike: head half an inch to an inch long, linear-oblong, composed of four to seven narrowly oblong contiguous sessile spikes which have a conspicuous column of staminate flowers at the apex: scales chestnut-colored, membranaceous with very broad hyaline margins, clasping at the base, broadly ovate, acute or the scabrous keel prolonged into a short mucro: perigynium pale brown, obovate, abruptly attenuated to the base and to the obliquely cut entire beak, convex on the outer side and concave on the inner, nerveless, sparsely serrate above on the obtuse margins, about as long as and narrower than the scale."—Southeastern Idaho, *Hayden*; part of *Bolander's* no. 4746, from near Mendocino City, California, is referred here by *Wm. Boott*. I am not yet able to draw characteristic distinctions between this species and *C. muricata*, var. *gracilis*.

250. *Carex muricata*, Linn. Sp. Pl. 974.

Introduced into old fields in Eastern Massachusetts, where it is common; also in Ohio according to Boott, Cincinnati, *Lloyd*, Kentucky according to Boott, and Ocean View, Virginia, *Ward*. Europe.

Var. AMERICANA.

C. muricata, Olney, Bot. King's Rep. 362, in part; W. Boott, Bot. Wheeler's Surv. 277; Bailey, Coulter's Man. 390.

Perigynium smaller and more abruptly contracted above than in the species, the scales mostly longer and the spikes commonly smaller: heads usually brownish. — Colorado to New Mexico and Arizona; Santa Rita Mts., Arizona, *Pringle*.

Var. GRACILIS, Boott, Ill. 193.

C. Hookeriana, Dewey, Sill. Journ. xxix. 248, f. 75.

Colorado and Utah to California and Oregon, and northward into British America. Perhaps specifically distinct.

Var. CONFIXA, Bailey, Bot. Gaz. x. 203.

C. Hoodii, W. Boott, Bot. Calif. ii. 232, in part.

Very like Boott's figure of *C. Hoodii*. It also approaches forms of *C. cephaloidea*. *C. Hoodii*, as I understand the species, is characterized by its much stouter culms, its much heavier, browner, and more compact heads, which are made up of many-flowered, chaffy, linear or ovate more or less pointed spikes, and more upright perigynia, which are covered by the large scales. The brown and green and truncate characters of the spikes of the var. *confixa* are characteristic. — N. W. Wyoming, Utah to California and Oregon, and northward into British America.

251. CAREX SPARGANIOIDES, Muhlenberg; Willd. Sp. Pl. iv. 237.

C. cephalophora, β , Torr. Monogr. 389.

C. sparganioides, var. *minor*, Boott, Ill. 123.

C. muricata, var. *cephaloidea*, Dewey, Sill. Journ. xli. 330.

Throughout the Northern States east of the Mississippi.

* * *Plants stouter and the spikes aggregated.*

252. CAREX MUHLENBERGII, Schkuhr, Riedgr. Nachtr. 12, f. 178.

C. pinetorum, Willd.; Schlecht. in Linnæa, x. 265.

Readily distinguished by its stiff culm and nearly orbicular, narrowly winged and strongly nerved perigynium. — Throughout the States east of the Mississippi; "on the Missouri below Ft. Pierre," Dewey.

Var. ENERVIS, Boott, Ill. 124.

Perigynium nerveless or very nearly so. — Fishkill Landing, Highlands, N. Y., *J. L. Russell*; rocks near Wilmington, Delaware, *Canby*.

Var. AUSTRALIS, Olney, Hall's Pl. Texanæ, 25.

Heads denser than in the species: spikes globular or nearly so: bracts more dilated at the base: perigynium less prominently nerved and much broader. Aspect of typical forms of *C. straminea*. — Wet prairies at Houston, Texas, Hall. Some specimens which were distributed for this by Olney are *C. Muhlenbergii*.

253. CAREX CEPHALOIDEA, Boott, Ill. 123.

C. sparganioides, var. *cephaloidea*, Carey, Gray's Man. 1848, 513.

Large and stout, with broad and long flat leaves (about a quarter-inch wide): perigynium large, broadly ovate, entirely nerveless, wing-margined: heads tawny. Nearest ally is *C. Muhlenbergii*. — Illinois to Dakota and Wyoming, McShea.

254. CAREX CEPHALOPHORA, Muhl.; Willd. Sp. Pl. iv. 220.

Throughout the States east of the Mississippi, and on the Great Plains of British America, Macoun; Indian Territory, Butler.

Var. ANGUSTIFOLIA, Boott, Ill. 123.

C. Leavenworthii, Dewey, Sill. Journ. 2d ser. ii. 246.

Lower, and leaves short and narrow: heads oblong, tawny: perigynium mostly smaller. Distinct in appearance. — Ranges with the species, but evidently not common.

F. Dioica, Tuckerman, Enum. Meth. 7. (*Nardina*, Tuckerman, l. c. *Capitata*, Christ, Cat. Eur. Car. 11.) Spike one, small; plants small and slender, often dioecious.

255. CAREX CAPITATA, Linn. Sp. Pl. ed. ii. 1381.

Alpine summits of the White Mountains to Hudson's Bay, Labrador, and Greenland. Europe.

256. CAREX ALASKANA, Boeckeler, Engler's Bot. Jahrb. vii. part iii. 277.

"Cespitose: culms few, filiform-setaceous, erect, one and a half to three and a half inches high, nearly terete, smooth, many-leaved at the base: leaves crowded, longer or shorter than the culm, rigid, setaceous, more or less curved, nearly obtuse, canaliculate below, partially plane above with denticulate margins: sheaths short, narrow, and nerved, fusco-ferruginous: spike androgynous, oblong-linear becoming oblong-lanceolate (three and a half to four lines long), 8-12-flowered the four to six upper ones staminate: scales thin-membranaceous, small, orbicular-ovate, short-acuminate, the keel one-nerved: perigynium (immature) small, erect, green, about equalling the scale, short-stipitate, oblong, attenuated both ways, the orifice membranaceous, emarginate, the angles above rough. — Alaska, Krause."

257. *CAREX NARDINA*, Fries, Mant. ii. 55.

C. Hepburnii, Boott, Hook. Fl. Bor.-Am. ii. 209, t. 207.

Upper Marias Pass, Montana, *Canby*, and northward to Greenland and Kamtschatka; Cascade Mts., Oregon, Lyall, according to Boott. Europe.

258. *CAREX GYNOCRATES*, Wormskjold in herb.; Drejer, Revis. Crit. Car. 16.

C. Redowskiana, C. A. Meyer, Cyp. Nov. t. 4.

C. dioica, Torr. Monogr. 387.

C. Fischeriana, Gay, Ann. Sci. Nat. x. 286.

C. monosperma, Macoun in herb.; Bailey, Carex Cat.

Pennsylvania and New York to Arctic America; South Park, Colorado, *Wolf*. Europe.

259. *CAREX DIOICA*, Linn. Sp. Pl. 972.

C. Linnæana, Host, Gram. iii. 51, t. 77.

Maukschia lævis, Heuff. Flora, 1844, 527.

Perigynium broader and more sharply angled than in the last: tips of the leaves smoother. — Said to occur in Greenland.

260. *CAREX EXILIS*, Dewey, Sill. Journ. xiv. 351.

Along the coast from New Jersey to Newfoundland, *La Pylaie*; "borders of mountain lakes, Essex County, New York," Gray's Manual.

Section XIV. HYPARRHENÆ, Fries, Summa, 72. Staminate flowers borne at the base of the spikes (or in *C. bromoides* and *C. siccata* variously situated).

- A. *Elongatæ*, Kunth, Enum. Plant. ii. 402. (*Tenuifloræ*, Kunth, l. c. 405. *Heleonastæ*, Kunth, l. c. 393. *Stellulatæ*, Kunth, l. c. 399. *Deweyanæ*, Tuckerman, Enum. Meth. 11. *Canescentes*, Fries, Summa, 72. *Loliaceæ*, Nym. Consp. Fl. Eur. 780, mostly. *Monastes* and *Lagopineæ*, Nym. l. c. 779.) Spikes silvery green or sometimes tawny when mature, distinct, mostly small; perigynium not wing-margined nor conspicuously broadened, mostly nearly flat on the inner surface.

* *Perigynium ovate, sharp-margined, firm, often thickened at the base, spreading in open and at maturity stellate spikes.*

261. *CAREX ECHINATA*, Murray, Prodr. Goett. 76.

C. stellulata, Gooden. Linn. Trans. ii. 144.

C. grypos, Schkuhr, Riedgr. Nachtr. 18, f. 193.

C. sterilis, W. Boott, Bot. Calif. ii. 236, excl. descr.

Culms stiff: spikes large, all contiguous or nearly so: perigynium large (usually two to three lines long), much attenuated above. —

Jefferson Co., N. York, *Crawe*; near Mackinaw, Michigan, *Loring*, and northward; California, *Bigelow*, near Mendocino City, *Bolander* 4739, Red Mts., *Bolander*, Coast Range, *Bolander* 6193; Oregon, *Hall*, *Howell*; Alaska, *Mertens*. Europe.

Var. CONFERTA, Bailey, *Carex* Cat.

C. stellulata, and var. *conferta*, Chapm. Flora, 534.

Differs from the species in the oblong, densely flowered, and more spreading spikes and recurved perigynium. — Along the coast from Florida to Newfoundland, *La Pylaie*.

Var. MICROSTACHYS, Boeckeler, Linnæa, xxxix. 125.

C. stellulata, var. *radiata*, Wahl. Königl. Acad. Handl. xxiv. 147.

C. scirpoides, Schkuhr, Riedgr. Nachtr. 19, f. 180.

C. sterilis, Willd. Sp. Pl. iv. 208.

C. sterilis, vars. β and γ , Torr. Monogr. 392.

C. stellulata, vars. *scirpoides*, *sterilis*, and *angustata*, Carey, Gray's Man. 1848, 544.

C. echinata, var. *angustata*, Bailey, *Carex* Cat.

Var. *microcarpa*, Bailey, Coulter's Man. 395 (a clerical error).

More slender: spikes small and more or less scattered: perigynium smaller, less conspicuously beaked, the scales usually shorter in proportion to the perigynium than in the species. Perplexingly variable. — Throughout the States east of the Mississippi and those bordering it on the west; Twin Lakes, Colorado, *Wolf* 1018; Moose Mts., British America, *Macoun*. Europe.

* * * *Perigynium ovate or nearly so, not sharp-margined, firm in texture, mostly erect in closely flowered and rounded spikes.*

262. CAREX CANESCENS, Linn. Sp. Pl. 974.

C. curta, Gooden. Linn. Trans. ii. 145.

C. vitilis, var. *pallida*, Olney, Bot. King's Rep. 364, v. s.

From Pennsylvania and Ohio to Arctic America and Oregon. Europe.

Var. DUBIA, Bailey, Bot. Gaz. ix. 119.

C. elongata, Olney, Bot. King's Rep. 365, v. s., not Linn.; Bailey, Coulter's Man. 394, excl. descr.

Uintah Mts., Utah, *Watson*, and Alta, Wahsatch Mts., *Jones*.

Var. ALPICOLA, Wahl. Fl. Lapp. 232.

C. Gebhardii, Hoppe, Caric. t. 30.

C. curta, var. *brunnescens*, Pers. Syn. ii. 539.

C. Richardii, Michx. Fl. Bor.-Am. ii. 170.

C. vitilis, Fries, Mant. iii. 137.

C. canescens, var. β , Torr. Monogr. 393.

C. canescens, var. *sphaerostachya*, Tuckerman, Enum. Meth. 10.

C. Buckleyi, Dewey, Sill. Journ. xlviii. 143.

C. sphaerostachya, Dewey, l. c. xlix. 44.

C. canescens, var. *vitis*, Carey, Gray's Man. 2d ed. 514.

C. canescens, vars. *minor* and *brunnescens*, Boott, Ill. 220.

C. vitilis, var. *brunnea*, Olney, Bot. King's Rep. 364.

C. Bolanderi, vars. *minor* and *sparsiflora*, Olney, Proc. Am. Acad. 1872, 407.

Exceedingly variable. At times it counterfeits forms of *C. echinata*, var. *microstachys*. — Throughout the continent north of N. Carolina.

Var. POLYSTACHYA, Boott, Rich. Journ. ii. 344.

C. arcta, Boott, Ill. 155, t. 497.

C. leiorhyncha, Kunze, Suppl. Riedgr. t. 21, not C. A. Meyer.

C. Kunzei, Olney, Proc. Am. Acad. 1872, 407.

Spikes approximated or densely aggregated into a head, the lower ones often subtended by a short bract, which is dilated at the base; perigynium longer-pointed than in the species, nerved, stipitate and spreading. — Ashland, Massachusetts, *Morong*; Vermont, *Barnet*, *Blanchard*, *Alburgh*, *Pringle*; Maine, *Porter*; Canada, *McCrae*, and westward to Oregon, *Hall*, *Howell*, and *Henderson*.

263. CAREX HELVOLA, Blytt; Fries in Bot. Notiser, 1848, 58.

Differs from *C. canescens*, var. *dubia*, which may not be distinct, chiefly in its broader scales and entirely smooth and nerveless perigynium. — Said by Boeckeler to occur in Greenland.

264. CAREX PRÆGRACILIS, W. Boott, Bot. Gaz. ix. 87.

Culm exceedingly slender (over two feet high and scarcely half a line broad), naked, stiff and erect, rough on the angles above: leaves thread-like and convolute: head a half-inch long, a line broad, composed of three or four small contiguous spikes, the uppermost of which is conspicuously staminate-flowered at the base: bracts possessing a clasping base and tapering into a rough somewhat spreading awn which exceeds its spike: scales similar to the bracts, but shorter and broader, covering the perigynia: perigynium brown, ovate-acuminate, obscurely nerved, somewhat rough on the margins above. — San Diego, California, *Miss Scott*.

265. CAREX TRISPERMA, Dewey, Sill. Journ. ix. 63.

Maryland and Pennsylvania to Newfoundland, *La Pylaie*, and Great Plains of British America, *Macoun*, and Carlton House, *Drummond*.

266. *CAREX REMOTA*, Linn. Sp. Pl. 2d ed. 1383.

Resembles tall and lax forms of *C. canescens*, but differs in the much scattered spikes (an inch or more apart) which are subtended by long and lax leafy bracts (one to four inches long).—Newfoundland according to Gay, and Sitka according to Flora Rossica. Europe.

267. *CAREX TENUIFLORA*, Wahl. Königl. Acad. Handl. xxiv. 147.

Cold swamps from Central New York and Northern New England to Northern Minnesota and Hudson's Bay. Rare. Europe.

268. *CAREX PHYLLOMANICA*, W. Boott, Bot. Calif. ii. 233.

"Culm six to eighteen inches high, smooth: leaves rigid, a line or two broad, attenuated into a sharp triangular summit, much exceeding the stem: lowest bract filiform, often far exceeding the culm, the others scale-like and shorter than their spikelets: head chestnut-colored, oblong (three fourths inch long), composed of from three to six spikes which are contiguous or the upper ones crowded, the uppermost one the largest (three or four lines long) and linear-club-shaped, the others ellipsoidal: scales broadly ovate or roundish, obtuse, chestnut-colored with green mid-nerve and hyaline margins: perigynium lance-ovate, obtuse at the base, gradually tapering into an obliquely cut nearly entire beak, the orifice and long fissure on the outer side reddish brown, serrate above on the acute margins, not nerved, a little longer than the scale."—In sphagnous swamps near Mendocino City, California, Bolander 4746.

269. *CAREX NORVEGICA*, Schkuhr, Riedgr. 50.

Wells, Maine, Blake, and northward. Evidently rare in America. Europe.

270. *CAREX HELEONASTES*, Ehrhart; Linn. fil. Suppl. 414.

C. Carltonia, Dewey, Sill. Journ. xxvii. 238.

C. marina, Dewey, l. c. xxix. 247.

Culm stiff, rough on the angles, about a foot high, longer than the rigid involute leaves: spikes brown, globular, aggregated into an oblong head a half-inch or less long: perigynium broadly elliptical, plump, marked with slender brown nerves, about the length of or longer than the acute brown scale. Resembles some of the stiff alpine forms of *C. canescens*, var. *alpicola*.—Norway House and York Factory, Herb., and Kicking Horse Lake, Rocky Mts., Macoun, British America. Europe.

271. *CAREX LAGOPINA*, Wahl. Königl. Acad. Handl. xxiv. 145.

Smaller than the last, the leaves flat: spikes mostly oblong, narrowed below: scales abruptly acute. Too near the last and the next

(see Coulter's *Man.*).— Uinta Mts., Utah, according to Olney; near Ebbett's Pass, Calif., Brewer 2063, according to Olney and W. Boott; Rocky Mts. of British America, *Drummond*; maritime rocks, Labrador, *Allen*; Greenland. Kamtschatka. Europe.

272. *CAREX GLAREOSA*, Wahl. Königl. Acad. Handl. xxiv. 146.

Perigynium short-beaked and almost like that of *C. canescens*: scales acute, about as long as the perigynium: culms weak: leaves narrower: otherwise like the last. — Greenland, *Vahl*, *Fries*, etc., to Behring Straits, *Wright*, and Shumagin Isl., Alaska, Harrington. Kamtschatka. Europe.

Var. *CÆSPITOSA*, Boeckeler, *Linnæa*, xxxix. 76.

C. ursina, Dewey, *Sill. Journ.* xxvii. 240.

C. glareosa, var. β , Boott, *Ill.* 153.

C. glareosa, var. *ursina*, Bailey, *Carex Cat.*

Small (an inch or two high) and densely cespitose: culms often curved: heads smaller. — Greenland, *Fries*, *Warming & Holm*. Spitzbergen. Kamtschatka.

* * * *Perigynium ovate-lanceolate or nearly linear, mostly in loose spikes.*

273. *CAREX BROMOIDES*, Schkuhr, *Riedgr. Nachtr.* 8, f. 176.

Swamps and wet places from Florida and Louisiana to Canada and westward to Colorado and California, *Hillebrand* 2315.

274. *CAREX BRIZOIDES*, Linn., var. *NEMORALIS*, Wimmer, *Fl. Siles.* 401.

Creeping: culm one to two feet high, flaccid, mostly a little longer than the narrow and lax light-colored leaves: spikes three to six, linear (four to five lines long), yellow, contiguous in a small and open chaffy head: perigynium lanceolate, greenish, nerved, rough on the thin margins, about the length of or a little longer than the thin and appressed muticous scale. — Arctic America, according to Boeckeler. Europe.

275. *CAREX DEWEYANA*, Schweinitz, *An. Tab.*

Named in honor of Professor Chester Dewey, 1784–1867, author of forty-two articles in *Silliman's Journal on American Carices*, embracing the years between 1824 and 1866. — Northern States northward and westward to California and Oregon; New Mexico, *Wright*. Variable.

Var. *BOLANDERI*, W. Boott, *Bot. Calif.* ii. 236.

C. Bolanderi, Olney, *Proc. Amer. Acad.* vii. 393.

California to Washington Territory.

- B. *Ovales*, Kunth, Enum. Plant. ii. 394. (*Cyperoidæ*, Tuckerman, Enum. Meth. 8.) Spikes tawny or dark, rather large, sometimes crowded; perigynium with a more or less thin or winged margin, which is mostly incurved at maturity, rendering the perigynium concave inside.

* *Perigynium ovate-lanceolate or narrower, with conspicuous wing-margins.*

276. *CAREX SICCATA*, Dewey, Sill. Journ. x. 278.

C. pallida, C. A. Meyer, Mem. Acad. St. Petersb. i. 215, t. 8.

C. Liddoni, Carey, Gray's Man. 1848, 545, not Boott.

C. siccata, var. *hispida*, Olney, Exsicc. fasc. iv. no. 25.

Distinguished by its irregular and indistinct spikes, the lower ones small and all or in part staminate, only the terminal one conspicuous, and by the abrupt contraction of the perigynium just above the achenium. — New England to Illinois, and northward and westward to Colorado, California, and Kamtschatka; Arizona, *Rusby*:

277. *CAREX LIDDONI*, Boott, Hook. Fl. Bor.-Am. ii. 214, t. 215.

C. adusta, var. *congesta*, W. Boott, Bot. Calif. ii. 238.

This species has been much confounded with others, especially the next. Its erect and thick rusty head and very large and comparatively firm brown perigynium distinguish it. See Coulter's Man. 397 for further characters. — Sixteen-Mile Creek, Montana, *Scribner*; Summit Camp, California, *Kellogg*; and along the Columbia, *Scouler*.

278. *CAREX PRATENSIS*, Drejer, Rev. Crit. Car. Bor. 24.*

C. adusta, var. *minor*, Boott, Ill. 119.

C. adusta, W. Boott, Wheeler's Rep. 277.

Distinguished at once from the last by its well-defined spikes, which are silvery brown and more or less narrowed at the base, and by the smaller and very thin translucent green perigynium. Mature heads either erect or nodding. Often distributed for *C. Liddoni*. I have heretofore referred to that species specimens collected by Macoun and others. — South Park, Colorado, *Wolf*; Yellowstone Falls, Wyoming, *Letterman*; Silver City, Moose Jaw, and Long Lake, British America, *Macoun*; Saskatchewan and L. Winnipeg, *Bourgeau*; N. Minnesota, *Bailey*; E. Oregon, *Ousick*; and Hood River, Wasco Co., Oregon, *Henderson*; Pic River, Lake Superior, *Loring*; Middle Bay, Labrador, *Allen*; Greenland. — Commoner than the last.

* * *Perigynium mostly ovate-lanceolate, scale-like, with little distinction between the margin and the body, mostly greenish.*

279. *CAREX ARIDA*, Schweinitz & Torrey, Monogr. 312.

C. scoparia, var. *Muskingumensis*, Tuckerman, Enum. Meth. 17.

* *C. pratensis*, Phillippi, Linnæa, xxix. 81, from Chili, being a more recent species, should be known as *C. PHILLIPPI*.

Ohio and Kentucky to Wisconsin. Said by W. Boott to have been collected in the Sierra Nevada Mts., California, by Dr. Kellogg.

280. *CAREX TRIBULOIDES*, Wahl. Königl. Acad. Handl. xxiv. 145; Fl. Lapp. 250.

C. lagopodioides, Schkuhr, Riedgr. Nachtr. 20, f. 177.

C. scoparia, var. *lagopodioides*, Torr. Monogr. 394.

C. lagopodioides, var. *composita*, Olney, Exsicc. fasc. ii. no. 10.

Throughout the States east of the Mississippi and the States bordering it on the west; New Mexico, *Fendler*. Abundant northward.

Var. *CRISTATA*.

C. cristata, Schwein. An. Tab.

C. straminea, var. *cristata*, Tuckerman, Enum. Meth. 18.

C. lagopodioides, var. *cristata*, Carey, Gray's Man. 1848, 545.

C. mirabilis, Dewey and auth., in part.

C. Bebbii, Olney, Exsicc. fasc. ii. no. 12.

Open swales and meadows, Pennsylvania to New England and Canada, and northwestward to the Saskatchewan.

Var. *REDUCTA*.

C. scoparia, var. *moniliformis*, Tuckerman, Enum. Meth. 17.

C. lagopodioides, var. *moniliformis*, Olney, Exsicc. fasc. ii. no. 8; Bailey, Bot. Gaz. x. 380.

Culm slender, especially above, where it surpasses the long-pointed and lax leaves: spikes two to ten, small, nearly globular (usually less than three lines in diameter), all distinct, the lowest separated, mostly bright straw or rust colored, the points of the spreading perigynium conspicuous. — Massachusetts to Vermont and New Brunswick, *Fowler*; S. Louisiana, *Langlois*, *Joor*.

281. *CAREX SCOPARIA*, Schkuhr, Riedgr. Nachtr. 20, f. 175.

C. scoparia, var. *minor*, Boott, Ill. 116, t. 369.

C. lagopodioides, var. *scoparia*, Boeckeler, Linnæa, xxxix. 114.

States east of the Mississippi and on its western borders, and high northward, and westward to Colorado and the Great Plains of British America.

Var. *FULVA*, W. Boott, Bot. Calif. ii. 237, in part.

Stouter: head lighter-colored, very dense. Little known. — California.

* * * *Perigynium ovate or ovate-orbicular, mostly tawny or brown, thickened in the middle, the mostly conspicuous wing-margins more or less incurved (very narrowly winged in C. Bonplandii).*

282. *CAREX ADUSTA*, Boott, Hook. Fl. Bor.-Am. ii. 214.

C. argyrantha, Tuckerman in Herb. distr. 1859.

C. albolutescens, Olney, Exsicc. fasc. i. no. 8.

C. albolutescens, var. *argyrantha*, Olney, Exsicc. fasc. i. no. 9.

C. albolutescens, var. *sparsiflora*, Olney, Exsicc. fasc. v. no. 11.

C. adusta, var. *argyrantha*, Bailey, Carex Cat.

Maryland, *Smith*, to Lake Superior, *Macoun*. Not common.

Var. *GLOMERATA*, Bailey, Carex Cat.; Bot. Gaz. ix. 139.

C. albolutescens, var. *glomerata*, Olney, Exsicc. fasc. v. no. 10.

Spikes few-flowered, aggregated into a loose mostly tawny head: perigynium large, almost wingless, nearly filled by the large dark achene. — Mt. Desert, Maine, *R. W. Greenleaf*; New Brunswick, *Fowler*; N. Minnesota, *Bailey*; Saskatchewan, *Herb. Gray*.

283. *CAREX STRAMINEA*, Schkuhr, Riedgr. 49, f. 34, and Nachtr. 23, f. 174.

C. festucacea, Willd. Sp. Pl. iv.

C. straminea, var. *brevior*, Dewey, Sill. Journ. xi. 158.

C. straminea, var. *minor*, Dewey, l. c. 318.

C. straminea, var. *Schkuhrii*, Gay, Ann. Sci. Nat. x. 363.

C. straminea, vars. *intermedia* and *festucacea*, Gay, l. c. 364.

C. straminea, var. *festucacea*, Tuckerman, Enum. Meth. 18; Boott, Ill. 120, t. 386.

C. hyalina, Boott, Journ. Bost. Nat. Hist. Soc. v. 112.

C. tetrastachys, Scheele, Linnæa, xxii. 347.

C. festucacea, var. *tenera*, Carey, Gray's Man. 1848, 545.

C. tenera, Sartwell, Exsicc. no. 45, Carey, Olney, et al., not Dewey.

C. straminea, var. *tenera*, Boott, Ill. 120, t. 384; and vars. *Crawei* and *Meadii*, Boott, Ill. 121, tt. 388, 389.

C. fœnea, var. β , Boott, Ill. 118, t. 376.

C. fœnea, var. (?) *ferruginea*, Gray, Man. 5th ed. 580.

C. straminea, var. *hyalina*, Gray, Man. 5th ed. 580.

C. tenera, var. *suberecta*, Olney, Exsicc. fasc. ii. no. 16.

C. straminea, var. *typica*, Gray, Man. 5th ed. 580.

C. tenera, forma *erecta*, Olney, Exsicc. fasc. ii. no. 14.

Culm erect, one to two feet high, mostly stiff, much longer than the erect long-pointed stem leaves: spikes three to eight, all distinct, ovoid or globose, rusty or straw-colored, mostly approximated in an erect head: perigynium orbicular or ovate-orbicular, often cordate at the base, few-nerved, thin, very broadly winged, spreading, abruptly

C. heptastachya, Boeckl., Linnæa, xxxix. 114, is probably from Merida, Venezuela, instead of Merida, Costa Rica, as recorded. (*Vide* Hemsl. Bot. Biol. Cent.-Am. iii. 473.)

contracted into a smooth or nearly smooth beak which is not longer than the body, much wider and usually longer than the acute scale. — Florida and Texas to Canada, and westward to Colorado and Oregon. Extremely variable.

Var. *MIRABILIS*, Tuckerman, Enum. Meth. 18.

C. mirabilis, Dewey, Sill. Journ. xxx. 63, mostly.

C. festucacea, var. *mirabilis*, Carey, Gray's Man. 1848, 545.

C. cristata, var. *mirabilis*, Gray, Man. 5th ed. 578, mainly.

C. lagopodioides, var. *mirabilis*, Olney, Exsicc. fasc. ii. no. 9.

Distinguished from the species by its long and lax culm and leaves (culm often four feet high), loosely flowered green spikes, and much narrower and thinner perigynium. — Mostly in the shade, throughout the Northern States westward to Nebraska and Iowa.

Var. *CONGESTA*, Boott ; Olney, Proc. Am. Acad. vii. 393.

Spikes densely aggregated into an ovoid or globose head. — California and Oregon. Resembles *C. Liddoni*, from which it is separated by its broad perigynia.

Var. *MAXIMA*.

C. Wrightii, Olney, Exsicc. fasc. ii. no. 21.

Spikes few, globular and very large (one half to three fourths inch in diameter!), contiguous, rusty: perigynium very broad and very abruptly contracted into a long beak which is conspicuously spreading. — Texas, Buckley, Wright.

Var. *ALATA*, Bailey, Carex Cat.

C. alata, Torr. Monogr. 396.

C. alata, var. *pulchra*, Olney, Exsicc.

Spikes green or pale, narrowed towards the top; perigynium very broad, the point conspicuous: culm and leaves much like those of *C. lagopodioides*. — Michigan to Massachusetts and southward along the coast to Louisiana. Apparently rare far inland.

Specimens from Massachusetts and northward with numerous spikes aggregated into bunchy heads are evidently to be referred here. They closely resemble forms of *C. lagopodioides*.

Var. *FÆNEA*, Torrey, Monogr. 395.

C. fænea, Willd. Enum. Pl. Hort. Berol. 957.

C. straminea, var. β , Gay, Ann. Sc. Nat. x. 362.

C. leporina, var. *bracteata*, Liebm. Mex. Halv. 76.

C. straminea, var. *chlorostachys*, Boeckeler, Linnæa, xxxix. 118.

Distinguished from the species chiefly by the silvery-green spikes, which are oblong, erect, contracted below, and very dense with ap-

pressed perigynia. From var. *alata* it is distinguished by the stiff culm, the more appressed and narrower spikes which are mostly narrowed below, and the narrower appressed perigynia. — Along the coast from New Brunswick to Mexico.

Var. *fænea* forms a transition to *C. tribuloides*. Vars. *alata*, *fænea*, *mixta*, and *moniliformis* form a sub-species which is distinguished from other varieties by the green or silvery aspect of the spikes. Although extremes of all these varieties appear to be remarkably distinct from *C. straminea*, I am yet unable to trace a single character which has any permanence. In fact, the intermediate forms which I cannot refer satisfactorily to any variety are as numerous as the types. The distinctions between vars. *alata* and *fænea* are especially inconstant. Var. *mixta*, when better known, may be found to possess specific characters.

Var. MIXTA.

C. lagopodioides, W. Boott, Bot. Calif. ii. 237.

C. adusta, W. Boott, l. c. 238.

C. cristata, var. *mirabilis*? W. Boott, l. c.

C. scoparia, var. *fulva*, W. Boott, l. c., in part.

Culm stout, longer than the leaves: spikes silvery, ovoid, not often conspicuously narrowed below, approximate: perigynium much smaller than in the species, silvery green, nerved, narrowly but conspicuously winged. Runs into many forms, some of which bear small and much crowded spikes. The Pacific coast representative of var. *fænea*. Its characters are imperfectly determined. — California, *Bolander* 50, 3864, 6216, *Brewer* 1642, part of *Torrey's* 551 from near Merced River, Summit Camp, *Kellogg*, *Bigelow's* specimens which were distributed as *C. lagopodioides*, San Bernardino, *Parish*, *Hillebrand* 2305, 2317; Oregon, *Hall* 589.

Var. MONILIFORMIS, Tuckerman, Enum. Meth. 17.

C. adusta, Carey, Tuckerman, et al., not Boott.

C. fænea, var. γ , Boott, Ill. 118, t. 377.

C. fænea, var. (?) *sabulonum*, Gray, Man. 5th ed. 580.

C. silicea, Olney, Proc. Am. Acad. vii. 393.

C. straminea, var. *silicea*, Bailey, Carex Cat.

Spikes five to eight, silvery, all distinct and conspicuously narrowed below (clavate), disposed in a loose and slender mostly nodding head: otherwise nearly like var. *fænea*. Transition to *C. adusta*. Several different plants were early distributed as var. *moniliformis*, but a recent letter from the late Prof. Tuckerman says that the variety was

proposed to include the maritime plant here designated. — Sands of the sea-shore from Maine to New Jersey.

Var. *APERTA*, Boott, Ill. 120, t. 385.

C. tenera, Dewey, Sill. Journ. viii. 97, f. 9 (immature specimen).

C. festucacea, Sartwell, Exsicc. no. 44.

C. tenera, var. *major*, Olney, Exsicc. fasc. ii. no. 15.

C. straminea, var. *tenera*, Bailey, Bot. Gaz. x. 381.

Spikes four or five, heavy, globular or broadly conical, separated, bright tawny or rusty, disposed in a loose nodding head: perigynium inclining to be narrower than in other varieties. Transition to *C. scoparia*, with which it is often confounded, but from which the globular and distinct spikes at once separate it. — Bogs and meadows from Massachusetts to Oregon. Common eastward. Usually growing in stools.

Var. *INVIS*A, W. Boott, Bot. Gaz. ix. 86.

Spikes small (about two lines broad), ovate, tawny, variously disposed in dense or open heads, the lowest often very remote or on a long subradical peduncle, the lower ones of the head subtended by long and thread-like bracts (two to five inches long). Transition to *C. scoparia*. — Common about Boston, Mass.; Mt. Desert, Maine, W. Boott; salt marshes, Bombay Hook, Delaware, *Commons*.

284. *Carex leporina*, Linn. Sp. Pl. 973.

C. ovalis, Gooden. Linn. Trans. ii. 148.

Distinguished from erect forms of typical *C. straminea* by the oblong or cylindrical appressed spikes which are contiguous in a short head (about an inch long), and the narrow and thin appressed perigynium which somewhat resembles that of *C. scoparia*. Aspect intermediate between *C. straminea* and *C. scoparia*. — Said by W. Boott to be established on Long Island in Boston Harbor. Europe.

Var. *AMERICANA*, Olney, Proc. Amer. Acad. 1872, 407.

C. petasata, Dewey, Sill. Journ. xxix. 246.

C. leporina, Bailey, Coulter's Man. 396.

Distinguished from the species by the narrow involute leaves, longer perigynium, and general aspect. From the small and loose-headed forms of *C. festiva* it is distinguished by its narrow and rigid leaves, which are much shorter than the culm. — Colorado, Utah, Oregon, and British America.

285. *CAREX BONPLANDII*, Kunth, Enum. Plant. ii. 380.

C. Purdiei, Boott, Ill. 26, t. 67.

C. tenuirostris, Olney in Parry's Botan. Obs. in W. Wyoming, Amer. Naturalist, 1874, 24.

N. W. Wyoming, *Parry* 284; Summit Valley, Sierra Nevada, California, *Pringle*. South America.

Var. *ANGUSTIFOLIA*, Boott, Ill. 115.

Var. *minor*, Olney, Bot. King's Rep. 365.

Mountains of Colorado and Utah. South America.

286. *CAREX SUBFUSCA*, W. Boott, Bot. Calif. ii. 234.

Culm two feet and more high, smooth, slender but stiff, longer than the long-pointed narrow leaves: spikes four to six, well defined, small (about three lines long), rusty, aggregated into a small loose naked head a half or three fourths inch long: perigynium very small and thin (a line and a half or less long), densely packed, but the points conspicuous. Distinguished from *C. festiva*, var. *gracilis*, by its rounded and well-defined spikes which are lighter colored, its short and nearly obtuse scales, and its much smaller and abruptly slender beaked perigynium. — Summit Camp, California, *Kellogg*.

287. *CAREX FESTIVA*, Dewey, Sill. Journ. xxix. 246.

C. oreades, Meyer, Bull. Acad. Brux. ix. part ii. 248.

C. Orizabæ, Liebm. Mex. Halv. 75.

C. pinetorum, Liebm. l. c.

From Colorado westward and high northward, and southward to Mexico. Variable. N. Europe.

Var. *HAYDENIANA*, W. Boott, Bot. Calif. ii. 234.

C. Haydeniana, Olney, Bot. King's Rep. 366.

Mountains from Utah northward.

Var. *GRACILIS*, Olney, Proc. Am. Acad. 1872, 407.

Very slender, often two feet or more high, the spikes small and mostly indistinct and either somewhat scattered or loosely aggregated. As at present received, it probably includes more than one variety or species. — California, in the Sierras.

288. *CAREX ATHROSTACHYA*, Olney, Proc. Am. Acad. vii. 393.

Colorado and Montana to California and Oregon; British America.

289. *CAREX SYCHNOCEPHALA*, Carey, Sill. Journ. 2d ser. iv. 24.

C. cyperoides, Dewey, Sill. Journ. iii. 171, not Linn.

Central New York to Canada, and westward to the Great Plains of British America. Rare.

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